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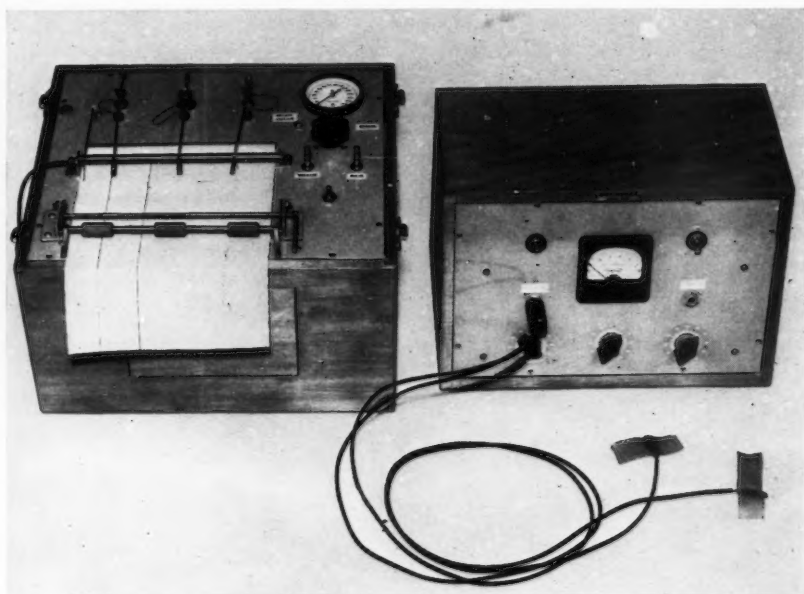
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THE AMERICAN PSYCHOLOGIST

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BASIC STUDIES ON THE SUPPLY AND DEMAND OF RESEARCH TALENT¹

C. GILBERT WRENN

University of Minnesota

The demand for research workers in the natural and social sciences who operate at a creative level, is acute. Just how acute no one knows. Developments in the natural sciences are influenced by changing societal conditions and in turn scientific findings create social problems. No one needs to be told that both national and international conditions in *human relationships* calls for creative work of a high order—and soon. The explosive nature of many such problems is placing a terrific strain upon the resources of both the natural and the social sciences. Intellectual endeavor of a high order is a great social want in the face of both the present world emergency and the unknown emergencies of the near future. The extent of the actual demand for such workers is far less well known. It is here that research is needed.²

DIFFICULTIES IN DETERMINING DEMAND

Anyone approaching the study of supply and demand with optimism is quickly and thoroughly disillusioned. There are no figures of demand in any field that one can rely on with confidence. Even in such fields as medicine, pharmacy and engineering where a great many facts have been collected, the estimates made are hedged around with many qualifications and warnings about the imponderables. The general trend indicates that there is at least a potential demand for many more natural and social scientists than will be available during the next few years because: (1) we failed to exempt young scientists and students in the sciences from the draft; (2)

there has been a great dislocation of scientists from universities to industry and government, thus slowing down the process of training; (3) both government and industry have greatly increased their employment of natural scientists, and government its use of social scientists; (4) the growing population of college and university students has increased the demand for teaching staff; (5) permanent shifts in demand have been brought about by the war (physicians and psychiatrists for veterans, electronic and atomic research, etc.). These are the *causes* of an increased social want but so far no one agency has attempted to go beyond noting the significance of these factors *in even one field*.

Only a few studies of demand have been made and most of these are subject to the influences of uncontrolled variables. L. H. Hattery of the Office of Scientific Personnel analyzed the variables present in any study of demand in a research memorandum dated December 15, 1947. He said that there are three groups of variables that affect demand of personnel that must be considered in any projection of demand: (a) imponderables; (b) institutional and military secrets; (c) relative need.

Under the topic of imponderables Hattery discusses the effect on demand of war or preparation for war; sudden changes in the supply of persons with specialized training; general level of economic activity; economic or industrial change in any part of the world which demands trained personnel from populous or industrial areas such as the United States; new social or economic policy creating a demand for trained personnel such as medically trained personnel required under a system of universal medical care; scientific discoveries such as atomic fission, electronics or plastics. In addition there are basic trends in society which may develop at an accelerated or diminished rate. Who knows how rapidly adult education, for example, is going to develop?

It is well recognized that the military agencies of our Government will be reluctant to reveal their

¹ A partial report of the study made during the spring of 1948 for the Conference Board of Associated Research Councils through the Office of Scientific Personnel of the National Research Council and the Social Science Research Center at the University of Minnesota.

² Social want or even proved need is not always consistent with demand. The latter term is inclusive of purchasing power and denotes a want so well recognized and so urgent that someone will pay for meeting it. Social want can be proved through logic, but estimates of demand require proof of an objective, numerical nature.

future needs for specially trained personnel, for to do so would be a violation of military security. The competitive position of national states makes secret many military demands for personnel. It is perhaps not so well recognized that industrial competition makes it very difficult to ascertain in advance the production or distribution plans, and through them the personnel needs, of any company or corporation. Various types of secrecy make the estimation of personnel demand a frustrating experience.

Hattery's statement regarding the factor of "relative need" applies actually to need and not to demand. He uses as an example the drawing power of the Veterans Administration in the employment of clinical psychologists. Because of steady demand and the subsidization of training by the Veterans Administration there is a severe disproportionment of potential psychological services for veterans as compared with those for non-veterans. This extends downward into training and attracts students into clinical psychology who might otherwise have specialized in such branches of applied psychology as social, educational, or industrial. Hattery believes that such a diversion of psychologists ought to be examined against the relative need of society for other types of psychological specialists. (In spite of the pertinence of these comments regarding clinical psychologists, "relative need" is not apt to affect demand unless social legislation transforms a social want into a "demand" through financial support or the legal requirement of specialized services. Such action *would* be, however, one of the imponderables affecting demand.)

Under the circumstances, it is surprising that anyone has even attempted estimates of demand. Some have made such estimates, but the limited information provided is in a specific area and leaves the student of the problem of total supply and demand much at sea. There are too many gaps. Some studies do not give sufficient attention to important variables and one is reluctant to accept their conclusions at all. Furthermore there is sometimes a clamor, made by an individual who knows neither supply nor demand in his field but who does not hesitate to shout loudly about the great "scarcity" of men like himself.

Some of the most encouraging work is being carried on in pharmacy by the Pharmaceutical Survey of the American Council on Education; in engineering by the Manpower Committee of the American Society for Engineering Education; in medicine by the U. S.

Public Health Service; and in various of the natural sciences by committees of the National Research Council. The Bureau of Labor Statistics is making a continuous attack upon long-range predictions in many of these fields.

From scattered studies one can glean such non-comparable data as (1) a "need" for fifty geologists a year for the next ten years; (2) the potential demand for 50,000 more doctors by 1960 than are in prospect if medical standards throughout the country are raised to the present level of the top one-fourth of the states; (3) by 1975 there will be 275,000 to 300,000 hospital and domiciliary beds as compared to 80,000 in 1941; (4) a "marked" demand for engineers until 1950 when a surplus may develop; (5) a shortage of 8,000 PhD's in the physical sciences by 1955 (based upon strictly pre-war production of PhD's in the sciences); (6) a shortage of pharmacists until 1950; (7) "an unknown greater number" of mathematicians and statisticians will be required than will be produced; (8) 6,800 psychologists at PhD and MA levels are in demand by Federal agencies by 1948; (9) 16,000 more psychiatrists "needed" (not demanded) than are now available; and (10) 200,000 new college and university staff members by 1952, and 250,000 by 1960, if the goals for higher educational enrollment set by the President's Commission on Higher Education are to be reached.³

The studies required to produce even these meager results entailed much labor and thought. There is no intent at this point to disparage the quality of the studies made but rather to indicate that the data provided are unsatisfactory (often to those making the study) and scattered. The possible supply of PhD's in 1950 will be 5,000 which is about one-half more than were awarded such degrees in 1940.⁴ Because of increased national concern in problems of defense, in social adjustment and in statesmanship, perhaps 90 per cent of these will be in the natural and social sciences (it was 87 per cent in 1940). *Will this be enough?* Has demand increased faster than supply? Much evidence points to an

³ On the other side of the picture, Ewan Clague, in his address before the Educational Conference of the Seventh Annual Science Talent Search on March 2, 1948 thinks that "the shortages (of scientists) will be alleviated within several years." He is basing this prediction upon general increases in college enrollments and advanced degrees over 1940.

⁴ Estimate made by the writer from an analysis contained in another part of this report and published under the title "Potential Research Talent in the Sciences—Based on Intelligence Quotients of PhD's." (8).

affirmative answer but the amount of the shortage is still unknown.

RESEARCH SUGGESTIONS FOR THE STUDY OF DEMAND

Basic research into both need and demand on a broad scale is required before studies in a specific area can be appropriately designed. Several such projects suggest themselves. Each is time-consuming and costly but there is little profit in pooling the results of the segmented studies currently under way with their variation in methods and in the assumptions made. Furthermore there are too many gaps left between the fields studied. A comprehensive study of demand is vital if planning and intelligent effort are to increase the supply and channel it into the areas where national need is greatest.

(A) The first project is an historical or developmental analysis of what M. H. Trytten, Director of the Office of Scientific Personnel of the National Research Council, has called "the rise of specialism." If the factors that have caused this rise could be teased out, then their influence in the future could be estimated. One of the factors involved lies in the intrinsic expansibility of scientific research itself. One fact leads to three new hypotheses. One field of study subdivides itself into six. How important has this factor been *in each* of the several major fields of research? There has been a marked development of industrial research. Has this come about through intelligent planning upon the part of industry or because one research worker produced results which called for the employment of a second and a third? There has been an increase in research training facilities in universities. Did demand cause research training to increase? What can be expected of this influence in the future? Such factors as these, if their influence upon the past is understood, may throw much light upon the development of demand in the future.

(B) A second major study would analyze a cross section of present demand in industry, government, and education. It would depend upon the following: (1) Very careful sampling of the employing institutions. This would require use of whatever is known about the comparability of research positions (see Project (A) in the next section) and the representatives of the institutions selected. It would also require almost complete returns to avoid bias. (2) The use of appropriate procedures by each institution to estimate demand, employing such factors as the ratio of research staff to total staff, an index

of expansion or retrenchment, and the long-term trend of production. (3) Study by an independent group of the national political, social and economic factors that affect employment of scientists in government, industry and education. (4) Application of a correction factor of (3) upon (2).

(C) A careful analysis of census data to supply the perspective needed for projects (A) and (B). Professor Roland S. Vaile of the University of Minnesota has suggested some pivot points in any analysis of long-term trends as observed from United States census data. (1) Increase in the professions as compared to increase in general population (from 1910 to 1940, there was an increase in the general population from an index figure of 100 to 143; and in professional occupations an increase from an index figure of 100 to 192). (2) Varying increases in employment in the different professions. (1910 to 1940 changes in *thousands of persons employed*: chemists from 16.6 to 60.0; college staff from 15.8 to 75.8; lawyers and judges 114.7 to 180.5; civil engineers from 52.0 to 105.5; mechanical engineers from 15.4 to 95.3; etc.) Such an analysis should be made by decades, to determine the consistency of rise and the ratio of increase. (3) New entrants into the professions by decades. (Increase in absolute numbers plus 5 per cent replacement: 449.7 thousands in 1910-20 and 561.8 thousands in 1930-40.) The professions demanding research training should be distinguished from those demanding (a) non-research professional training and (b) the vocations demanding high level ability but not professional training. A gross comparison could be made between the possible 650,000 to 700,000 new professional entrants expected during 1940-50 with the cumulative total of 1,440,000 eighteen-year olds with I.Q.'s of 125 and over to be expected to arrive at college age during all the years of the same decade (8). Both of these estimates need to be checked by further research; they merely suggest the type of gross long-range figures that could be produced by such a study.

If studies of demand are thought essential, then those of supply are urgent. It is a safe to make the assumption that there is some gap between supply and demand and measures need to be taken to increase the supply of qualified and trained research workers. Little can be done on intelligent recruitment, however, until an analysis of supply factors has been made. In the succeeding sections of this

paper, suggestions will be made of research needed on supply and on recruitment.

RESEARCH SUGGESTIONS FOR THE STUDY OF SUPPLY

(A) A study is needed, by some type of job description, of the positions that fall within the category of first-line research activities. This would include both original research and the direction of research. Higher educational institutions, major government activities, and major industries employing research scientists (physical, biological, and social), should be surveyed to determine the character of *present* positions that fall into defined categories of research workers. The next step would be to secure estimates of the number, and statements descriptive of *projected* positions. Next is the classification of those positions into research levels, those requiring unlimited research initiative and comprehension and those which are subordinate and limited in scope. Some of the latter would require as much basic training as the unlimited class, but the former would be expected to travel considerably beyond their basic training whereas the latter would not be expected to do so.

(B) With a description and classification of positions provided under (A), it would be then possible to determine what proportion of the positions require the PhD. It is expected that many agencies now glibly demand PhD's for almost all research positions but that not all of them, by any means, actually require individuals with that level of training. This phase of the study has nothing to do with a study of the number of individuals demanded but with the *description of the positions* requiring different levels of basic training.

The PhD degree is a common minimum requirement for positions requiring creative ability and initiative. This may or may not be justifiable. PhD training is uneven in quality, hampered by adherence to tradition, and dependent almost entirely upon undergraduate grades for admission to the program. The assumption that intellect *per se* is the most significant single factor in PhD training or in later creative research work may be justified but we are in almost complete ignorance of the other human qualities essential to creative work. PhD training may stifle and discourage as many as it stimulates, because of our ignorance in this regard. At least three basic studies are needed in the appraisal of this training and of those who take it.

(1) What traits or characteristics besides the factor of abstract intelligence contribute to the successful

pursuit of PhD training? A study can be made of a sample of those starting PhD training and completing it as opposed to those starting it and not completing it. The factors studied might include: age; marital status; economic status; kind and recency of previous academic work; graduate field entered; measures of emotional stability and personality structure; measures of interests; persistence thresholds and similar factors. Through appropriate statistical analysis, it may be found that the necessary pattern is not as complex as commonly assumed. Two or three factors may account for the major variance. This simplicity is suggested in the study of leadership by Keller (3) but contrary findings emerge in the army studies of pilots reported by Guilford (1).

(2) A second study of PhD's would be an analysis of productive and non-productive PhD's. From the former will come the majority of original research workers. A longitudinal study could be made of the activities of men during the first years after completing the PhD and an estimate made of the extent to which they would continue to produce creative work. A second study could be made of the characteristics of well-established creative workers and this pattern then applied to the fledgling PhD's. The proportion of the total crop of PhD's that might be expected to make original research workers could be roughly determined and this applied to the estimated annual supply. Furthermore, the fields showing the greatest gap between promise and realization of research productivity could be identified.

(3) A third study would be an analysis of *individual* histories of PhD holders who fall in each of the four quarters of the distribution on general scholastic aptitude. This study should include an analysis of the field of work engaged in, educational background, professional recognition by colleagues, publications,—data on the individual that illuminate both pre- and post-PhD factors in his life.

Suggestions as to specifics for inclusion in case histories are found in Visser's study, which indicated that the East and North Central sections, cities, county seats and college towns, clergymen, professors, business men, and farmers produced more than their share of notables; whereas per capita wealth, topography and other factors seemed unrelated to such production. An objective rating of case history items may result in a tentative cut-off point in an academic aptitude distribution. This, when applied to the general population, would aid in determining the potential supply of PhD's.

(C) The ability levels in different fields of study need careful analysis. Taking the work done by Sibley (5) and Terman (6) as a starting point, the relative ability levels of men now in the various disciplines can be further analyzed. A start can be made with the general ability level and then the differentiating factors studied through a sampling study of representatives of the various fields. With an outline of all major factors essential to research work in the various sciences, ratings by colleagues could be secured and an analysis of objective data about each man's activities and productivity could be made.

With such information in the hands of graduate faculties, we might anticipate a better channeling of men to the various graduate fields of study. An analysis of 232 PhD's secured during 1940-47 where the undergraduate degree had been secured from a Minnesota college, for example, shows a range in average freshmen percentile on the 1937 A.C.E. test from 71 to 89 in the three major groupings of biological, physical, and human sciences. Sibley's data, translated into percentages, show that 52 per cent of graduate students in his study who are in the social sciences fall into categories of "outstanding" and "superior" in terms of their undergraduate records in five institutions. On the other hand, 71 per cent of those who are graduate students in mathematics and the natural sciences, and 41 per cent of those in medical school, are in these two categories. More complete data of this sort are urgently needed. Attention should be given also to competitive recruiting devices used by departments within a graduate school which may bias the most effective distribution of PhD students (2).

(D) A study needs to be made of the proportion of women with PhD's and with other graduate degrees. There were four times as many men as women securing advanced degrees in a 1947 followup of the 1938 Minnesota high school graduates. This ratio was doubtless affected by the war period. But for the United States as a whole in 1939-40 there were a little over twice as many men as women awarded master's or equivalent degrees and ten times as many men as women awarded doctoral or equivalent degrees. If the total number of women with research training in the sciences is an insignificant part of the whole, then our supply figures must be modified. What proportion of our potential supply is composed of women? How is the supply reduced by correcting for the proportion who become research workers? What are the losses of women in science

by marriage and subsequent retirement from active research? Furthermore, some fields of research might be much more adequately staffed by women workers and this differential needs to be determined.

In brief, the research on supply revolves around two major projects:

1. A definition of the high level talent sought, expressed in terms both of job requirements and human characteristics.

2. An analysis both of the reservoir of available talent (trained and untrained) and the anticipated supply of functioning research workers.

SUGGESTIONS FOR RESEARCH ON RECRUITMENT AND INCENTIVES

It is obvious that more able young men and women are needed to train for the PhD and to enter the job market. The emphasis is upon *able* in a general sense but more specifically upon those who are able in original research. Even before more is known about the specific characteristics of those who will become productive workers, the reservoir must be filled to a higher level as a safety precaution. Really a series of reservoirs is needed from which will be drawn (1) the high level college graduates, (2) the graduate students, (3) the PhD's and finally (4) the original and productive research workers. At each level there must be intelligent recruiting of qualified individuals if the next level reservoir is not to be drained dry.

The President's Commission on Higher Education has made a strong plea for the financial subsidy of undergraduate and graduate students through a carefully planned system of Federal scholarships and fellowships (9). The plan proposed would cover 20 per cent of all non-veteran undergraduate students, amounting to 300,000 students in 1948-49 and proportionately more each year as the veteran population decreased. The fellowship program, established for an initial five-year period, would provide for 10,000 in 1948-49, increasing 10,000 annually to 30,000 in 1950-51 through 1952-53. With each fellowship valid for a maximum three year period this might conceivably, with normal progress of all and no attrition allowed for, produce 60,000 PhD's by 1953. If the present report has correctly estimated the "normal" rate of approximately 5,000 PhD's annually, or 25,000 over the same five-year period, this would provide a tremendously increased reservoir from which research workers could be drawn.

It is extremely doubtful whether an adequate grad-

uate staff could be found within the next five years to provide for what would be *between two and three times* the present number of PhD candidates. The fellowship program, if instituted, could not arrive at its theoretical maximum until after that period. *As a matter of fact, recruiting or subsidy of any considerable increase in graduate students must await the availability of an increased graduate staff.* This is where recruiting must start and at once.

The second question arising out of a consideration of the Commission's far-reaching recommendation is whether or not mere financial subsidy will increase sufficiently the number of able and qualified graduate students who will take advantage of the subsidy. No plan of subsidy can create new talent out of average human material. All that subsidies can do is to redirect the flow of existing talent or to discover existing talent that would otherwise miss opportunities for development. The financial rewards provided a PhD may not prove a sufficient lure to those who are capable of securing the degree, even with training subsidies. Nor is interest in PhD training and research as a life work necessarily a concomitant of high level ability. *Encouragement of parents and the stimulation of interests in creative life are factors of unknown significance.*

The following research studies basic to a recruiting policy suggest themselves:

(A) The influence of economic and cultural status on college attendance and on securing advanced degrees needs analysis *in relation to other factors.* A study of college attendance in Ohio by Toops (7) gave evidence that the vocation of the parent was an important factor in determining the attendance of children at college. He believes, after a study of a dozen or more variables, that attitude of parents, which may be inferred from the vocation, is a more important factor than sheer economic status. If Toop's conclusion is correct, then the triad of vocation, income, and attitude need separation and weighting. Professor Douglas H. Marshall of the University of Minnesota is conducting a study of school-going in rural Minnesota which indicates that religious and racial factors in defined cultural areas of the state are clearly related to school attendance and staying power (4). Financial subsidy may by no means be the only approach to a solution. As a matter of fact, to place full reliance upon this factor, as suggested in the President's Commission Report, may be socially uneconomical.

(B) Not all high level talent should go into scientific research. Some is needed for business and some for government administration. Such individuals do not need, perhaps should not have, PhD's. An analysis is needed, in logical if not in statistical terms, of the number of men of general ability equal to that possessed by the PhD who are required in business and administration. Also what are the psychological characteristics, over and above that of high general intelligence, which are needed for such workers? Furthermore, which of these are unique to non-research work and which common to it?

These problems can be approached through a study of how individuals of a given level of ability *distribute themselves* with respect to training and occupation. What *are* the sociological and economic factors related to this distribution?

(C) The organization and requirements of graduate schools may be discouraging able men from attempting a PhD program. A study of the reasons given for discontinuing graduate school work and of the characteristics of the men who do so may uncover some serious areas of blockage. This study is related to that suggested in the preceding section, but the emphasis here is upon *graduate school procedures.* The need for such a consideration is strongly suggested by Hollis' study and his recommendations (2).

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THE PSYCHOLOGY CURRICULUM AT COLUMBIA COLLEGE

FRED S. KELLER AND WILLIAM N. SCHOENFELD

Columbia University

When, in September, 1946, we introduced a new psychology curriculum at Columbia College, we were carrying out a long-incubated plan. Part of this plan, and something of its implementation, was described at the 1947 meeting of the EPA in Atlantic City. We are now in the third year of our venture and feel that it is time to give our fellow-teachers a more complete account. We sincerely hope that, as a result, they will favor us with their appraisals or comments.

It was during the war years that we began the discussions which led to our new program. By 1946-47, the necessary arrangements had been made and we were ready to set out. Initially, we focussed our attention on the introductory course, the keynoter of the curriculum and the gauntlet which transient students and future colleagues alike must run. Later, as the first course seemed to prosper, we extended the idea to our advanced offerings, until nearly all the College courses were included within an integrated educational structure. The result has been highly satisfying. Whatever the ultimate outcome, we have found new pleasure in teaching and have been enabled, we believe, to give our pupils a sounder introduction to the science of psychology than we had provided before.

THE INTRODUCTORY COURSE

The teaching of the beginning course, as of any other, is grounded upon one's answers to the questions of *goal, content and form*—the Why, the What, and the How of teaching. When we took up the matter of goal, we found ourselves in good agreement with our colleagues. Like them, we wanted (1) to give our pupils some facts about the behavior of organisms; (2) to provide a coordinated picture rather than a patch-work of isolated items; (3) to instill a feeling for scientific method and research in psychology; (4) to help the student to apply, as well as possible, behavioral principles to his own and others' daily conduct; and (5) to arouse interest

in the science as such, attracting the ablest students and preparing them for any advanced work they might later undertake. In these and other aims we were at one with our friends. It was only with respect to matters of content and form of the course that we found ourselves veering to a different direction. As to the What and the How, we felt that the usual introductory course was incapable of realizing its high purposes.

WHAT TO TEACH?

Ordinarily, the first course in psychology presents to the student a wide variety of topics, ranging from nervous-system function to personality and social interaction. An attempt is made to give the student a bird's eye view of the things studied by, or of interest to, psychologists. The choice of topics seems to be largely dependent upon custom, and the order of topics is more or less arbitrary (see Dael Wolfe's article in the *American Psychologist* for 1947, 2, 437-445). Integration of the topics is seldom attempted. Indeed, it is impossible, in the present state of our knowledge, to relate within any known systematic framework the many problems offered to the student in the conventional presentation.

The choice of topics in such a course has often been defended by appeal to the virtues of eclecticism. But eclecticism is often misinterpreted to mean an absence of a coordinated viewpoint. We would contend that psychological theory today offers the opportunity to take just such a systematic stand. We are further convinced that many of our colleagues await only a crude approximation of a systematic text and an integrated curriculum before giving up their older ways of teaching. They do not like the encapsulation of topics, segregated one from the other by impenetrable theoretical barriers; they do not enjoy the citing of data unrelated by known and stated principles; and they are embarrassed by the fiction, transparent to the most naive student, that the conventional first course is a genuine prerequisite for advanced ones. They have not forgotten that

systematization of data is the purpose of science; they deplore the fragmentation of knowledge; and their good scientific sense does not hold with what often comes trippingly off their tongues.

Our own approach is not eclectic in the above sense. One who insists upon classifying theoretical psychologists into "schools" would unhesitatingly place us among the behaviorists. We acknowledge willingly our historical roots in the old behaviorism, but we do not accept the dead connotation of the label. We believe that all psychology is behavioristic, or, better, that the category includes all psychologists who hold to a naturalistic view of their science. In addition, within present-day behaviorism, we find *reinforcement theory* most satisfactory. Finally, we think that reinforcement theory has been given its most useful and comprehensive exposition by B. F. Skinner in his major work, *The Behavior of Organisms*.

Our agreement in viewpoint led us to conclude that our own introductory course was to be biologically toned, experimentally grounded, and systematically presented. We decided to offer a theoretical organization of fact, explicitly and unashamedly, rejecting confusion in favor of order, secure in the knowledge that this is the whole aim of scientific endeavor. Our subject matter, behavior, was to be treated in terms of the variables of which it is a function and the lawful processes it reveals. The generality of our "general" course was to be in terms of basic principles underlying all behavior, however variegated or of whatever species. The major problems were to be treated under a few main headings: conditioning; extinction; generalization and discrimination; induction and differentiation; motivation; and, possibly, emotion.

With such an approach, topics like intelligence, personality, and thinking do not make up a course in general psychology. Instead, they are specialized fields in which basic principles work themselves out in complex fashion under the influence of a cumulative behavioral biography. Moreover, the study of the nervous system, of receptors and effectors, or of the organism's genetic endowment ("heredity" and "environment") does not figure in a course of this sort. These matters are left to advanced study or bequeathed, perhaps, in the division of scientific labor, to the physiologist and geneticist. They become areas of study for those who are interested in the intervening bodily factors which act as pre-

requisites or parameters for stimulus-response relations.

HOW TO TEACH

Our third line of thought was concerned with the *form* of the beginning course. Here, our task was simpler. We concluded quickly that laboratory work must be an integral part of elementary instruction. The study of behavior is essentially an experimental science, and we felt that the value of a course of lectures, or lectures and demonstrations, would not alone be optimal. Laboratory work, we agreed, can make for a more mature understanding of a science and its methods. It is sounder pedagogically, permitting more active participation of the student in the educational process. It gives concreteness to the lecture material and a sense of proof and security about the facts that are learned. Besides, an experimental discipline needs laboratory preparation if advanced work is to be done. There could be no doubt, as we saw it, that our new course would profit by following our sister sciences in this respect.

With the goal, the content, and the form of our course clear in outline, we still had the practical part of our job ahead of us—the actual working out of our program. This presented a fresh set of questions, some of the answers to which are given, and others implied, in the account that follows.

THE COURSE IN OPERATION

A student taking introductory psychology at Columbia attends two one-hour lectures and four consecutive laboratory hours per week. The class meets as a whole for lectures and is subdivided into sections for laboratory. The course extends for one year (Psychology 1-2 in our bulletin) and admits students of sophomore standing or above. Because of the integrated sequence of work, the first half of the course is an absolute prerequisite for the second.

1. *The lectures.* Several problems arose in connection with the lecture material. One was the continual necessity for deciding what was elementary. Our systematic orientation answered the question of what major topics to cover, but did not tell us how far to pursue each one—at what stage the material became too advanced for the beginner. A second problem came from our need to expand certain theoretical points, deducing consequences when required, in order to fill in the picture we were trying to paint. A third was presented by our desire to

offer some cautious extrapolations from experimental data (often obtained at the subhuman level) to human conduct in daily life. While stressing the complexity of the human case as compared with that of, say, the rat or chimpanzee, we still wished to supply instances of an everyday sort to which our basic principles might reasonably be said to apply. Our solutions of these problems cannot be given here, but anyone can see that our task was not easy.

A related problem came from our lack of a textbook suitable for use in connection with our lectures. In the first year of the course, we distributed mimeographed notes to our students. These served as an outline of the material covered, but their inadequacy was soon apparent. Reluctantly, in the second year, we decided to write our own text, and we managed to turn out, in instalments, a rough draft which we sold to our class.

The major subdivisions of our lecture content, and of our text as planned, are as follows: Psychology and the Reflex; Respondent Conditioning; Operant Conditioning; Extinction and Reconditioning; Generalization and Discrimination; Differentiation; Chaining; Secondary Reinforcement; Motivation; Emotion; and Social Behavior. There is a logical sequence in this presentation which makes the later sections incomprehensible unless the earlier ones have been mastered. This gives a unified character to our product which is absent from the conventional course or text. If the titles and the order of treatment suggest a narrowness of outlook which is inconsistent with the wealth of data accessible to the present-day teacher, we can only point out that, within such a framework, it is possible to discuss reaction times, memorizing and forgetting, concept formation, meaning, insight, sensory and motor skills, pleasantness and unpleasantness, punishment, repression, regression, anxiety, and a number of other concepts in a way that takes little from their intrinsic interest or significance.

2. The Laboratory. Laboratory work, ideally, should be related, in content and time, to important aspects of the lecture and reading material. It was plain to us from the outset that our needs would be different from those of other laboratory courses in general psychology because of the difference in our course content. All signs pointed toward work with animals. We chose the white rat because it is hardy, inexpensive, convenient in size, easy to keep, and well suited to exemplify the principles we were

to emphasize in our teaching. We were then faced with the task of preparing room facilities, selecting appropriate experiments, and constructing apparatus.

A large room was divided by partitions into sixteen cubicles which are arranged along three walls; they open upon a central area into which chairs could be moved during discussion periods. The fourth wall of the room holds a blackboard in front of which is a long instructor's desk or table. Each cubicle contains an apparatus table upon which is mounted a Dazor floating lamp fixture; two student chairs; and a shelf from which hang various lengths and colors of plug-in wire for electrical connections, and which holds a number of accessory items like scotch tape, scissors, and a bottle of food-pellets. Other supplies may be obtained on occasion from the instructor's desk or are distributed by assistants.

A full set of the major apparatus pieces in each cubicle includes: (1) a lever which the animal is conditioned to press, providing a behavior sample that is used in many of the experiments; (2) a food-magazine for automatic delivery of pellet-rewards; (3) a four-channel tape recorder for obtaining temporal relations between stimuli and responses; (4) a kymograph for obtaining cumulative response records of the animal's behavior; and (5) a stimulus-control box that acts as a power source and a means of regulating such stimuli as light and electric shock. From a signal generator on the instructor's table, a wire runs around the room and is connected with a speaker in each cubicle for presentation of auditory stimuli. Practically all of this apparatus, and a few other special pieces, was designed for our laboratory and built in our shop.¹ In addition, we have found especially useful a combined living-and-working cage for each experimental animal. This cage, in which the rat is housed at all times, alone makes large-scale work with rats possible. It eliminates all handling of animals by students or the caretaker, and reduces generally the emotional upset that often impedes progress and obscures experimental results.

At the semester's opening, each student is assigned

¹For the design and construction of apparatus, we are especially indebted to John Volkmann, F. L. Blendinger, and F. C. Frick, without whose combined enthusiasm and talents we certainly could not have launched our program as soon or as adequately as we did. Dr. Frick, who was (with Dr. D. H. Bullock) an assistant during the first year of the course, has taken the principal part in writing up some notes on our early apparatus models (*Amer. J. Psychol.*, 1948, **61**, 409-414).

a cage containing a freshly-bought rat with which he works during the entire term. (A new animal is supplied for the second semester, when the old ones are donated to Columbia's Medical Center.) The caretaker of the departmental vivarium looks after the cleaning of cages, maintenance of feeding regimens, and the like. A laboratory fee of five dollars per student per term provides for the purchase and care of animals, as well as expendable laboratory supplies.

At the first laboratory meeting of a section, students are paired and cubicles assigned. At the same time, careful instruction is given in the operation and treatment of apparatus; information sheets are distributed; the writing of laboratory reports is discussed; and other arrangements are made for the experimental work that begins on the following week. A "dry run" is carried out, involving the hook-up of apparatus, operation checks by instructor or assistant, and transportation of cages from vivarium to laboratory and back.

The second meeting, and each one thereafter, is begun with a "briefing" of the assembled section. In general, this briefing covers the following points: (1) purpose and procedure of the experiment; (2) significance of the experiment and its relation to lecture material; (3) apparatus hook-up (a diagram is often made and left on the blackboard for reference); (4) treatment of the data collected; and (5) nature of the laboratory report desired. There is often lively discussion during this period, with students raising questions much more freely and informally than is possible at the lecture meetings. In addition to its reviewing and clarifying function, the briefing period permits some discussion of the design of experiments and proper use of experimental controls, the methods and rationale of simple descriptive and inferential statistics, and the like. An excellent opportunity to supplement the lectures is thereby exploited.

"Procedure sheets" are distributed to students during each briefing. They carry statements of the week's problem, the procedure to be used, the data to be gathered, and the treatment of data to be applied. They also contain questions (and space for answers) relevant to the work of the week and, sometimes, of preceding weeks. With questions answered and data appended, these sheets constitute the laboratory report. They are mimeographed on punched paper so that students may keep them in a loose-leaf binder and accumulate them to make up a manual of the year's work.

Briefings usually last about an hour. Then the

students go to their cubicles to hook up their apparatus and otherwise prepare for the day's work. When a pair signals its readiness, the apparatus is examined by the instructor or assistant and tested for operation. When all cubicles have been checked, the cubicle lights are turned on, the room lights are turned off, and one member of each pair reports to the vivarium for his animal. Cubicle partners alternate in the order of working their animals in successive laboratory periods, and help one another in conducting each experiment. Whether, on a given day, the partners perform duplicate experiments or use a slight variation of procedure, the use of two animals gives a greater assurance of results and permits inter-animal comparison for variability. Total working time for the two animals is figured so as to allow an interval at the end of the period for writing reports, which are completed and handed in before the student leaves the laboratory. Graded and corrected reports are returned during the section's next laboratory meeting on the following week.

The entire introductory course is staffed by four instructors and four assistants, together with a reader who prepares and grades examinations. Each laboratory section is handled by an instructor and one assistant who do the briefing, get the section started on its work, and pass upon the laboratory reports. Instructors and assistants gather in weekly conferences to decide upon future experiments, to look after the writing of procedure sheets, to agree upon the general content of the briefings, to discuss class progress, to exchange impressions and recommendations, and so on.

All the experiments performed in the laboratory deal with operant or instrumental behavior. With four consecutive hours of laboratory work each week, and thirty weeks in the academic year, it is apparent that considerable ground can be covered. The first semester is occupied mainly with experiments of a fairly routine nature, the outcome of which, in each case, is well known to the instructor in advance. At the end of the term, two or three periods are given over to some novel project aimed at giving the student a feeling of fresh exploration. The second semester, which also closes with a class project, permits a wider choice of experiments throughout, more off the beaten track and at times a bit spectacular. Since an organism is a cumulator of its history, the experiments done within each semester must be carefully selected. Participation of an animal in one experiment must not be permitted to confound the

results of another. In a few cases, it is necessary to counteract the influence of an earlier conditioning by subjecting the animal to an extinction period before setting him a new problem, but the proper sequence of experiments will greatly minimize this need. Moreover, the cross-comparison of results with animals that have different histories may be of interest in itself.

A partial list, by title, of the experiments performed last year (1947-48) in our laboratory is given below. In some cases, an experiment required one period; in others, it was carried on for two, or even three, periods without apparent exhaustion of its implications or loss of student appeal.

1. Operant conditioning with regular reinforcement.
2. Retention and extinction of a conditioned operant.
3. Periodic reconditioning (at fixed intervals).
4. The formation of a discrimination.
5. The reversal of a discrimination.
6. The effect of punishment.
7. The reduction of operant latency ("reaction time").
8. Chaining.
9. Secondary reinforcement.
10. The effect of drive upon response rate.
11. Light aversion.
12. Conditioning an avoidance response.
13. The conflict of motives.
14. An experimental prototype of "fetichism".
15. An experimental prototype of "masochism".

A fairly large number of students take introductory psychology at Columbia. Since each student has his own rat, the amount of data turned out each week is impressive. Despite the non-optimal conditions of experimentation, the trends of behavior revealed by so many animal groups may be useful in forecasting results to be expected from better controlled studies. We have, on occasion, had the class do the exploratory work required on some problem of more than instructional interest. The hearty cooperation of undergraduates is easily engaged and maintained for such work when they understand the significance of the problem and can see the progress they are making in its solution. We are convinced that such participation in the business of science makes for better education, whether as background for the liberal arts student or special training for the one who plans a scientific career.

AN EVALUATION

Although our introductory course now seems to us a natural, even conservative, sort of thing, we know that, to some, it will seem radical. A few may applaud it; others may find some good in it; many, perhaps, will reject the whole conception as ill-advised or dangerous. In our opinion, we are trying out a new approach to psychological education. We think that a thoroughgoing reform is needed, and we are attempting to move in that direction. But we are not blind to the fact that our offering is only one of several that are possible today; and we feel that other attempts to reorganize instruction ought to be made by exponents of other theoretical views. Intelligent students are the same sharp listeners as our professional colleagues, even though not as well informed. In the best tradition of scientific scepticism, they will query and profane our most beloved dogmas. The struggle for survival of scientific theories is fought in many arenas and the victory must be won in all. It will not do to forget the classroom.

Available indications point to the general good health of our course, but we can see that it has weak points. A major defect arises from the fact that an overly-large registration compels us to mass each student's laboratory hours on one day of the week. Originally, we planned on two two-hour periods per week, with students working singly rather than in pairs. Four consecutive hours of laboratory can become fatiguing. Moreover, the pairing of students, while not without advantages, sometimes leaves one partner with time on his hands. These are problems that can only be solved by increasing our facilities and the size of our staff.

Our class enrollment, in our first year of operation, was 120, twice the number we had expected. (There are about 1500-1800 students combined in the sophomore, junior and senior classes of Columbia College in any one year.) Last year it was 180 which is the maximum that present space and equipment can support. We had approximately 300 applications for this year, of whom only 180 could be accepted; and we have a list of about 30 men applying for places in the 1949-50 class. This congestion, which is embarrassing, has been increased to some extent by the fact that, last year, without petition from us, the College's committee on instruction voted to grant science credit to students who passed the course. Lacking additional laboratory facilities,

we are in the unhappy position of being unable to accept more than three-fifths of our applicants.

Visitors to our laboratory often ask about the cost of setting up such a course. Actually, we spent about \$5,500 for this purpose. As most science courses go, this is a pittance; for a laboratory course in psychology, it is a fairly large figure. We hasten to point out, however, that our course, being a *first*, was necessarily expensive. We had many problems of apparatus design and construction which, although now solved, went through several stages and entailed no small amount of labor and materials. Moreover, we aimed at the very best of equipment and facilities, looking toward durability under almost continual hard usage, and toward suitability not only for undergraduate instruction but for graduate research if desired. Although we tried to be frugal in our purchasing and to avoid hasty modifications or costly variation, we were often forced to spend more than we had planned upon. Today, we could reproduce nearly every piece of apparatus at a fraction of its original cost. Furthermore, there is nothing that we use which could not, in the interests of economy alone, be greatly simplified or even eliminated. The feeding of animals during experimentation could be done by hand rather than electrically; satisfactory cumulative response curves could be plotted with a pencil on a piece of graph paper; timing could be done with an ordinary watch; living-working cages could be made of wire mesh and wood; response levers could be made from metal coat hangers or similar material; and so on. Large cubicles could be done away with in favor of banks of compartments like those described by Carl Pfaffmann (*Amer. Psychol.*, 1947, 2, 559-560). Even the cost of animals could be reduced by dispensing with institute-bred rats and using such an animal as the pigeon which can be trapped on almost any campus and makes an excellent experimental subject. In fact, our course could be copied *in toto* for less money than it now takes most teachers to set up the simplest kind of introduction to experimental psychology.

We are frequently asked another question, of a very different sort: Aren't your students handicapped for advanced work by the kind of course that you give them? This cannot be answered in a sentence. As far as advanced work in Columbia College is concerned, we can give a clear *No*, since our first course is basic to nearly all the others in our department. With respect to students who

transfer to other colleges and take up advanced work, we have few reports, but they are in agreement. Such students tell us that they encounter no serious difficulties and feel that no 'restriction' was imposed by their work with us; they express strong approval of what we did with them in their first course. We are pleased, but not surprised, at such reactions. Despite many deletions of material covered in the usual introductory course, we have retained much of the 'classical' content. In addition, we feel that our students have had advantages not ordinarily provided: they know scientific work at first hand; they can appreciate good data and criticize bad; and they are sophisticated about the ordering of facts. In advanced work, they should be able to learn what is required of them; their confusion, where it exists, should be no greater than that of their fellows; and where new material has no ties with *any* theoretical viewpoint, they can hardly have been impaired by us. As for those students who move on to graduate study at Columbia or elsewhere, we have no reason, on the basis of Graduate Record Examinations, course grades, or personal reports, to believe them hampered by, or lacking in, undergraduate background. Finally, of the men who "take but one course" in psychology, we can only express our belief, implicit throughout this paper, that a sound knowledge of a few basic principles of behavior is a greater gift from us than anything else we could provide.

Looking back, we feel that we have done, as well as we could, what we thought was needed. Whether it can be done better, or deserves to be done at all, we leave for the future to show.

THE ADVANCED COURSES

As mentioned at the beginning of this report, our early discussions were not concerned exclusively with the introductory offering. We saw our reorganization as extending ultimately throughout the undergraduate curriculum. This extension depended, however, upon the success of the first course—our only innovation in 1946-47. This course having gone well from the start, four new courses were introduced in the following year. Two of them, Discrimination and Motivation, were laboratory courses; and two of them were seminars. This year, another laboratory course, in Conditioning, is being added. All of these are one-term courses, taught by the regular staff with the aid of two additional laboratory assistants. Three lecture courses of our old

curriculum were retained: Abnormal, Social, and Differential Psychology. Of these, only the Abnormal has undergone a revision in line with reinforcement theory. The other two, although not at odds with this viewpoint, do not depend so clearly upon the first-course material and will not be discussed in the present context.

The course in Discrimination (Psychology 3 in our bulletin) has two lectures and two three-hour laboratory periods per week. The subject matter, as indicated by the title, is a further study of discriminative processes and capacities, along representative lines. Like the other advanced laboratory courses, it is handled by one instructor and one assistant, and a laboratory fee of \$5.00 is charged each student.

Before 1947-48, we had for years offered a two-semester sequence called "experimental psychology" which was, as in many other colleges, our only laboratory course. This practice, in the light of our discussions, came to look strange, implying as it did that experimental psychology was a topic rather than a set of methods, and that here alone a student could learn the experimental side of an experimental science. We could imagine, as a parallel, a chemistry department that offered a single course in "experimental chemistry". Moreover, our beginning course was equally experimental, and it was our desire to provide laboratory work in as many of our courses as possible. Consequently, we dropped the old designation and substituted two new courses, entitling these simply "Discrimination" and "Motivation" to describe their topical content. Of these two, the former most closely approximates the old "Experimental", at least in the repertory of experiments and the use of human subjects. The experiments performed in the class last year included: the formation of a time discrimination; visual acuity; reaction time; dark adaptation; phase and time differences in auditory localization; contour graphs for apparent weights and apparent lengths; and concept formation.

Psychology 4, the *Motivation* course, also consists of two lecture hours and six laboratory hours, as in the case of Discrimination. All experiments to date have been done with white rats, fresh animals being supplied for each new experimental unit. A new, small-scale laboratory was constructed for this course and several new pieces of apparatus were added to the basic battery used in Psychology 1-2. The course is addressed to a further study of motivation—its types and properties. Last year's

experiments included: the effect of motivational level at the time of conditioning and extinction; discriminative stimulus accompaniments of motivation; anxiety and avoidance behavior; and several studies of the transferability of secondary reinforcement. We found that a laboratory course in this area is entirely feasible. Many motives (hunger, thirst, light-aversion, anxiety, etc.) are accessible; other operants than lever-pressing may be employed (e.g., cage-crossing, chain-pulling, and panel-pushing); and published experiments may be repeated or new ones designed.

Psychology 5, our *Abnormal Psychology*, is at present a three-point lecture course. Classical material is covered, but emphasis is placed upon recent experimental findings and an attempt is made to organize the facts within reinforcement theory. We hope that, within a year or two, this course may be made into a laboratory course, after the pattern of Psychology 3, 4, and 6. There is available in the present-day literature of this field a number of experiments, both animal and human, which could easily serve as a starting-point for such an offering.

Psychology 6, *Conditioning*, is to be given for the first time in the Spring Session of 1948-49. It too will be a laboratory course, utilizing the facilities of Psychology 4, and dealing exclusively with problems of operant conditioning in the white rat. A final selection of this year's experiments has not yet been made.

Psychology 15 and 16 are two seminars in *Contemporary Research Problems*. Each meets for two consecutive hours a week. Registration is limited in number, and only those students who have had training in several courses are admitted. The catalog description of each course reads: "Through readings, reports, and discussions, central problems of present-day psychology are considered and experimental designs for research are formulated. The general topic for this session is . . ." Last year, when these seminars were given for the first time, the topic for Psychology 15 was *verbal behavior*; for Psychology 16, *emotion*. Neither seminar is prerequisite for the other and a student may enroll in either or both. Senior psychology 'majors' are given priority, and each seminar is attended by the same four instructors who had charge of Psychology 1-2—a device that has been profitable for staff as well as students.

CONCLUDING REMARKS

Our undergraduate curriculum is, then, almost entirely integrated into a cohesive sequence. The principles developed in the first course sound the keynote and are a real prerequisite for all but two of the advanced offerings. The overlap between the introductory and advanced courses has been sharply reduced, if not eliminated altogether. The laboratory and the seminar have displaced or supplemented the lecture wherever and whenever we have found it possible. Use of animal subjects in the laboratories has been made without apology whenever it appeared that fundamentals of behavior would thereby be more readily grasped, but extrapolations from the rat to man have always been made with due caution. Yet basic problems of human behavior have been the ultimate concern of our teaching.

Such a curriculum as we have achieved was in no sense a private feat, nor was it built *in vacuo*. A spearhead must have its shaft, and we are gratefully aware that the execution of our plan depended

upon many persons and circumstances. An indispensable condition was the conjuncture, at one institution and at one time, of individuals who functioned as a team. We, and those who shared with us the day-to-day problems, had a common theoretical leaning and similar scientific aims. Within our group were men and women of varied and complementary talents, together with a spirit of selfless cooperation that permitted each one to make his maximal contribution to the common cause.

Finally, to our departmental colleagues and the Columbia College administrators we owe many thanks. From them we received a free hand and the generous means to try out our idea. To our voiced needs and unspoken hopes, they responded with warm encouragement and material support. Even when they did not see eye to eye with us, they were willing, with courageous and objective interest, to give us their trust and confidence in testing out a program.

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TRAINING IN CLINICAL PSYCHOLOGY: AN ENGLISH POINT OF VIEW

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DEVELOPMENTS during and immediately following the war have emphasized the great importance which the rather ill-defined field of "clinical psychology" has, both in the theoretical and in the practical sphere. Much discussion has centered on the definition of the subject matter, and on the best methods of training appropriate for practitioners; the report of the Committee on Training in Clinical Psychology of the American Psychological Association (1), the papers of the Josiah Macy Jr. Foundation Conference on Training in Clinical Psychology (5), and the minutes of the National Association for Mental Health Committee on the Training of Psycho-Therapists (7) are evidence of the wide interest taken in this matter by respectable bodies both in this country and overseas. The great importance of the subject, the hope that our experience in training clinical psychologists in the only British University Centre which undertakes such training might be of interest to American readers, and the belief that the direction along which both the APA and the Josiah Macy Jr. reports point lies counter to the best interests of psychology as a whole, and of clinical psychology in particular, have led us in this paper to discuss what, in our view, the nature and function of clinical psychology should be.

The main conclusion of the APA report, which is also supported by the majority of other recommendations, transactions, conferences, and memoranda which we have seen, lies in the stress "of the need for preparing the clinical psychologists with a combination of applied and theoretical knowledge in three major areas: *diagnosis, therapy and research*" (1). Equally briefly, it is our belief that training in therapy is not, and should not be, an essential part of the clinical psychologist's training; that clinical psychology demands competence in the fields of diagnosis and/or research, but that therapy is something essentially alien to clinical psychology, and that, if it be considered desirable on practical grounds that psychologists perform therapy, a separate discipline of *Psycho-therapist* should be built up, to take its place beside that of *Clinical Psychologist*.

Let us examine in detail the arguments put forward in favour of their belief by the writers of the APA report. Unfortunately, these arguments are given throughout in terms of unproven assumptions, lacking in any kind of factual support. We have been able to discover only two reasons for the belief "that no clinical psychologists can be considered adequately trained unless he has had sound training in psychotherapy" (1). One is in terms of social need: "The social need for the increase of available therapists is great. Clinical psychologists are being called upon to help this need . . ." (1). This argument has been widely criticized on the grounds that we must be careful not to let social need interfere with scientific requirements; that ultimately psychology cannot simply go where social need requires, unless it wishes to be led into a cul-de-sac. A science must follow its course according to more germane arguments than the possibly erroneous conceptions of "social need."

That other pressures than that of social need may be more important is indeed recognized by the writers of the report. They say: "If a social need for therapy exists, then the need for research is even greater" (1). "The fact that there is not equal pressure for the latter is mainly due to the excusable but still short-sighted outlook of the public. The universities, with their more far-sighted orientation, have a serious responsibility to develop research interests and abilities in the clinical psychologists they train. The interest should be in research on the laws of human behavior primarily and on technical devices and therapy secondarily" (1). Thus the first argument leads inevitably to the second, which is based on therapeutic experience as an indispensable qualification for research.

"Our strong conviction about the need for therapeutic experience grows out of the recognition that therapeutic contact with patients provides an experience which cannot be duplicated by any other type of relationship for the intensity and the detail with which it reveals motivational complexities. A person who is called upon to do diagnostic or general research work in the field of clinical psy-

chology is seriously handicapped without such a background; a person who is called upon to do research in therapy . . . cannot work at all without such a background" (1).

To a scientist, a statement of this kind must be anathema. It is traditionally conceded that the value of scientific research is judged in terms of its methodology, the importance, within the general framework of scientific knowledge, of the results achieved, and the possibilities that other scientists can duplicate the experiment with similar results. We wish to protest against the introduction of a new kind of evaluating device, namely, the background training of the scientist. To say that research in therapy (which presumably means research into the process and the effects of therapy) cannot be carried out at all by persons who are not themselves therapists appears to us to take the concept of research in this field right out of the realm of science into the mystical regions of intuition, idiographic "understanding", and unrepeatability of personal experience.

The arguments in favour of including therapy in the clinical psychologist's training course do not, then, appear very convincing to us. We may now turn to the arguments against the inclusion of therapy.

In the first place, it is our belief that in the field of mental illness, no less than in other fields of human endeavour, specialization of function is an inevitable condition for advance. The team of psychiatrist-psychologist-social worker constitutes such a combined attack on a problem, based on specialization of functions. In this team, the psychiatrist is responsible for carrying out therapy, the psychologist for diagnostic help and research design, and the social worker for investigation of social conditions in so far as they affect the case. Nothing but confusion and lowered efficiency all round would follow from an attempt to muddle up these different functions to any significant extent. There are far too few persons competent in their own sphere—be that psychiatry, psychology, or social work—to allow any but the most exceptional to combine several functions. But training courses are run for the average practitioner, not for the rare and isolated genius. It follows that training in clinical psychology should concentrate on those areas in which the psychologist can make his most significant contribution to the psychiatric team.

In the second place, it seems to us that there are

quite unanswerable reasons why therapy must be the prerogative of the physician. In this connection, we may quote Dr. D. G. Wright of the U. S. Naval Hospital, Great Lakes, Illinois, who points out that "the psychiatrist's part in defining the kind of pathological processes at work must be decisive. A great many pathological processes have significance only to the physician, and are in the first place illnesses which, although manifested by emotional and mental symptoms, are caused directly by injuries, diseases, and other organic processes in the brain" (8). Dr. Wright develops this point in greater detail in the article quoted.

In the third place, we believe that there are many dangers in the acceptance of the therapeutic role which can best be realized by quoting the following sentence from the APA report: "Psychologists, in our opinion, must come around to the acceptance of some kind of intensive self-evaluation as an essential part of the training of the clinical psychologist. We are not prepared to recommend any special form of such procedures, although some of us believe that whenever possible this should take the form of psychoanalysis . . ." (1). The reader may more easily see the danger in this recommendation (which itself is an almost inevitable consequence of the premise that clinical psychologists should do therapy) if he glances at the following statement, made by one of the best-known psychoanalysts in this country, whose experience in the field is probably unrivalled: "The transferences and counter-transferences developing during training analysis tend to give rise in the candidate to an emotional conviction of the soundness of the training analyst's theories" (3). In other words, it is proposed that the young and relatively defenceless student be imbued with the "premature crystallizations of spurious orthodoxy" which constitute Freudianism through the "transferences and counter-transferences" developing during his training. Here, indeed, we have a fine soil on which to plant the seeds of objective, methodologically sound, impartial, and scientifically acceptable research! It is because of this implication—no therapy without analysis—more than for almost any other reason that we wish to protest against the inclusion of therapy in the training syllabus of the clinical psychologist.

Our fourth reason for believing that therapy should not form part of the training of the clinical psychologist is closely related to our first belief that a thorough training in research and diagnostic test-

ing is, in itself, a full-time occupation and that the addition of a third type of training would merely result in a lower level of skill and knowledge in all three levels. In our experience, it takes two academic years to train students in diagnostic testing. It takes at least another two years to teach them the fundamental principles of research and statistical method. If part of this time were given over to learning how to fill the therapeutic role, it is difficult to avoid the conclusion that the training in diagnostic testing and in research would be much less complete than it should be. We need only point to the current research reports on psychiatric problems and those affecting clinical psychology to show that the level of research competence is distressingly low; anything mitigating against an improvement in this unsatisfactory state of affairs should at least be considered very carefully.

In the fifth place, it has been our experience that students who are interested in the therapeutic side are nearly always repelled by the scientific flavour of research training, while conversely, the students who are best suited and most successful on the research side betray little interest in active therapy. We feel that the APA Committee dismisses rather too airily this widespread belief that "the scientific and therapeutic attitudes mix poorly in the same person." If our experience be borne out by experimental work, which it should be easy to arrange, we suggest that here is a powerful reason for restricting training in clinical psychology to diagnosis and research.

In the sixth place, we believe that stress on the therapeutic function of the clinical psychologist encourages unscientific thinking in the field of selection. "The ability to carry out effectively the combination of functions called for depends upon the clinical psychologist's being the right kind of person" (1). It is interesting to note the qualities which the "right kind of person" must possess, according to the writers of the APA report. He must apparently possess, *inter alia*, superior intellectual ability and judgment, originality, resourcefulness, and versatility, curiosity, insight, sense of humor, tolerance, "un arrogance", industry, acceptance of responsibility, tact, cooperativeness, integrity, self-control, stability, and a variety of qualities whose operational definition would be even more difficult, such as "ability to adopt a 'therapeutic' attitude." It would be interesting to know the reliability and validity with which any of these "qualities" or

"faculties" can be measured or assessed, and to what extent they would characterize the clinical psychologist as opposed to, say, the lawyer, the doctor, the teacher, or any other professional person. As a job analysis, this list is perhaps typical of the "retreat from science" implicit in the adoption of the "therapeutic attitude."

In principle, we believe that the division of labour which we have advocated above in suggesting that research and diagnostic testing should be separated from therapy ought to be carried even further. We find ourselves in full agreement with Dr. A. Gregg, who writes: "I doubt whether the proficiency in research at present called for by the degree of PhD is the best training for as large numbers of psychotechnologists as will meet the rapidly mounting demand for such services. I simply doubt whether research ability of an order appropriate for the PhD degree exists on so large a scale. If it does not and you insist on all students having the research training appropriate for teachers and investigators, many students participating in well-oriented and well-controlled research work at the PhD level might profit from it in some measure, but the demand is for very large numbers of persons with general practical experience and reasonable competence. Not much more than ten per cent of medical students are capable at any time of excellent research work. Yet medical research flourishes" (4).

Accordingly, we believe that clinical psychologists should be trained, as it were, in two stages. Stage one would give them an adequate theoretical and practical knowledge of psychometric techniques and "psycho-technology" generally; it would enable them to fill the very large number of jobs opening up for persons capable of fulfilling routine, every-day needs of the community. This training, in our view, could be carried out in one rather crowded year (eleven months plus one month's holiday, as is practiced at the Maudsley at present), or alternatively, in two ordinary academic years. This training would come after adequate undergraduate instruction resulting in a Bachelors Degree in psychology. Competence acquired in this way should be recognized, not by a degree, but by a University Diploma or a Certificate, granted after a searching examination involving practical as well as theoretical work. A person trained in this way could conveniently be called a clinical psychologist, junior grade.

Stage two would be additional to stage one, for a small number of students capable of benefiting

from it; and would consist in research training resulting in a PhD. Students having undergone this second stage of training could conveniently be considered as clinical psychologists, senior grade. Research work in this connection should be carried out in relation to problems relevant to clinical psychology, but preferably of a fundamental rather than of an applied nature.

In this connection, we place considerable importance on "program design." We agree with Marquis (6) that "program design" is of the utmost importance in the future development of psychological research in general, and of clinical research in particular. Program design, in his view, "is the attempt to plan a comprehensive, integrated series of studies in relation to a particular set of concepts focused on a central problem. It is the attempt to broaden and lengthen the scope of a research sufficiently so that we can tell whether it is really getting anywhere. It is scientific method in its full and complete form." We would suggest, therefore, that the research training of the future clinical psychologist should preferably be carried out as part of a general research program relevant to his specialty. In our limited experience, such a procedure has the double value of making the student feel that he is really assisting in the construction of something worth while, rather than merely fulfilling an arbitrary University requirement, while at the same time ensuring that fundamentally important research is done, rather than *ad hoc* work of little scientific value. Ultimately, if Marquis is right in his view that "program design" will assume greater and greater importance in the advancement of our scientific knowledge of human nature (and we have very little doubt that essentially this submission is correct), then it will be of very great importance that the next generation of research workers should be trained by actually participating in a research program of the kind mentioned. This argument is particularly strong in relation to clinical psychology, where almost any worth-while research implies co-operation between specialists of many different backgrounds. We have tried to set a pattern of "program design" in the series of researches reported in "Dimensions of Personality" (2), and knowledge gained in the process has been used in setting up the next stage of design growing out of our first series of findings.

We venture to make one further suggestion directed to an improvement of present-day training courses in clinical psychology. We believe that,

by and large, it would be advantageous for the student to be trained in clinical psychology in a University Department specially devoted to the purpose and directly located in a Teaching Hospital. Present practice tends to centre the student's academic teaching on a University Department and send him out as it were to a Hospital for practical work. In our experience, students are more likely to get a unified training in all aspects of clinical psychology when their training is given by a University Department itself centred on and located in a Teaching Hospital for Mental Disorders.

While, like most training courses in clinical psychology, our own is still in a very fluid and experimental state, we believe that essentially, the pattern followed and discussed briefly in this paper is one which has certain advantages over the type of course advocated by the APA Committee on Training in Clinical Psychology. We believe that the main points of difference, namely, the divorce of therapy from clinical psychology, the splitting up of training and diagnostic testing and of research into two relatively separate courses, and the combination of University School and Hospital under one roof are worthy of serious consideration. Our main intention has been, not to lay down rules to be followed, but to suggest for further discussion points of view which at present do not seem well represented in psychological thinking. Only through experimentation with different types of training can we hope to gain enough insight into the factors involved to make wise decisions regarding the training of clinical psychologists.

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THE ROLE OF REWARD IN PSYCHOTHERAPY¹

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A CONSPICUOUS feature of Hull's learning theory is that it holds that reward is essential to learning. In relation to therapy, this means, among other things, that problems of maladjustment must be described in terms of reward. Mowrer and Ullman (2) have done this very well by characterizing non-integrative behavior as having immediately rewarding but more remote punishing consequences. A clear illustration is furnished by a student who says this about himself in an autobiography: "This adjustive response of withdrawing, although successful in relieving tensions stimulated by fear of criticism, only intensified any social inadequacies which had become associated with my fear of criticism. As I used withdrawing more and more as an escape, I found it more and more difficult to meet and talk with people on a personal level. It was then that the nervous responses associated so frequently with my social contacts first became decidedly noticeable."

If maladjustive behavior is characterized by immediate rewards but more remote punishments, it would seem to follow that any modifications in such behavior would result from the punishment's becoming more immediate. The more immediate punishment should in turn inhibit the behavior and thereby force the acquisition of new responses or new modes of adjustment. We can invoke the principle of reward again by stating that its contiguity with the new modes of adjustment will lead to the displacement of the previous maladjustive patterns.

Let us now try to apply the concepts that have been elaborated in the foregoing remarks to therapy. When a client presents himself for therapy, he will ordinarily be under pressure. It might be said that his maladjustive patterns of response have caught up with him. Their punishing consequences are seemingly far from remote. It would also appear in the light of what has been said that the maladjustive behavior would be inhibited which would in turn lead to the acquisition of more adequate modes of response. Although the client's being under pressure

is often a favorable condition for therapy, it does not in and of itself guarantee any improvement in his adjustment. A withdrawn individual might otherwise simply be told to get out and mix. Such advice does not seem to be particularly effective. The dilemma with which we are confronted can be resolved, it seems to me, by the observation that while an individual may be under considerable pressure he at the same time can still derive immediate rewards from his inadequate modes of adjustment. A man who is preoccupied when matters of vital importance to him are being discussed reduces his tensions to some extent even though his behavior is self-defeating from a long-range point of view. An overly-aggressive child succeeds primarily in alienating his playmates but finds immediate outlets for his aggressions.

If it can be assumed, then, that a client is deriving immediate rewards from his behavior that may outweigh more remote punishing consequences (a principle also suggested by Mowrer and Ullman), the task of the therapist might be conceptualized as making the punishing consequences more available to the client. This is *not* to say that the purpose of the therapist should be to punish the client. On the contrary, a warm relationship with the therapist probably helps displace the anxiety-drive which motivates maladjustive behavior. This point can be tied in with Hull's learning theory, incidentally, in that responses are, of course, assumed to be associated with drives. Any modification of the latter should accordingly alter the corresponding behavior.

There are various procedures the therapist can employ to make the unfortunate consequences of behavior more available to the client. One is the discussion of these very consequences. A highly reserved individual, for example, impresses others as aloof. They in turn respond to him with aloofness which generates still greater defensiveness on his part. A student incurs the antagonism of a class by repeated and inappropriate bids for attention. The antagonism of the class motivates even more inappropriate attention-getting behavior and brings further rejection of the student. Any consideration of the kinds of consequences of behavior we have been de-

¹ Paper given at the Popular Request Symposium on "Systematic Implications of Hull's Learning Theory for Therapy," American Psychological Association, Boston, Sept. 8, 1948.

scribing presupposes the existence of rapport between client and counselor. We are not likely to perceive facts about ourselves or our behavior when our self-esteem is threatened. The various means of dodging such perceptions such as rationalization and projection might be conceptualized in Pavlovian or Hullian terms as conditioned-avoidance reactions. Such reactions don't extinguish in experimental situations until the animal discovers it will not be shocked. Clients seem to respond in a somewhat similar fashion. That is, they give up their avoidance reactions such as rationalization when they discover that the therapist is not going to punish them.

Still another procedure the therapist can use to make available to the client the unfortunate consequences of his behavior is enabling him to define his modes of adjustment. Let's say that a client reports that he sleeps excessively, prefers to spend a large amount of his time alone, and seeks instruction about his work even when it isn't necessary. Any one of these items of behavior by itself may baffle him. If they are all seen as manifestations of dependence or withdrawal growing out of his dependence they become more comprehensible and the client is able to define them as parts of a total mode of adjustment. In so doing he at the same time has a reaction which can be described as "I see what I am doing" or "I see the relationship between my behavior and my difficulties." In short, the punishing consequences of the behavior have been brought home.

One last but important means of making available to the client the punishing consequences of his behavior is the expression of feeling which Rogers (3) has discussed so well. We, of course, conceal our fears and hostilities from ourselves because it disturbs us to acknowledge that we are afraid or that we may to a greater or lesser extent actually hate our siblings, our parents, our mates, or our associates. These feelings accompany our behavior even though they are repressed. If they can be brought to light we then have significant cues to what we are doing which have not been present previously. It is interesting to observe that changes in behavior seem to occur when such cues become available without any verbal insight on the part of the client. Play therapy, for example, is characterized to a large extent by expression of feeling, but usually does not involve any intellectual understanding on the part of the client as to what has taken place.

With the inhibiting of maladjustive behavior through bringing to bear its punishing consequences,

the therapeutic process is not completed. Any learning theory should suggest to us that relearning or reorientation is an essential part of therapy. This point can stand emphasis since more attention has probably been given to insight than any other aspect of therapy. Reorientation is equally deserving of respect. Perhaps psychologists can make a unique contribution to therapy by elaborating the principles of learning in this connection. The investigation of these principles has been one of our major preoccupations, and reorientation in therapy might very well be defined as the application of such principles to readjustment.

Hull's theory would, of course, hold that new modes of adjustment are established through certain responses occurring and being accompanied by reward. What role can the therapist play in manipulating conditions in such a way that the client will meet with reward or success in his attempts at readjustment? While he cannot control the life experiences of the client, the therapist can influence his motivation and levels of aspiration. More specifically, he can assist the client in accepting himself, which will in turn affect his evaluation of his attempts at readjustment. A timid college freshman might consider himself a failure if he had a date but found his conversational efforts somewhat inept. From another point of view the fact that he had the date might be considered an important step in the direction of his reorientation. If he can adopt this point of view, he is in a position to reward himself, as it were, for the progress he has made. The motivation based upon self-acceptance, in short, is much different from that based upon unrealistic levels of aspiration, and the prospects of reward accompanying the former are much greater.

In addition to enhancing self-acceptance as a means of increasing the prospects of the client's steps toward reorientation meeting with reward, the therapist can also help the client to analyze the nature of the behavior he is trying to learn. A young man who is faced with the necessity of seeking interviews to secure a job but who is also hesitant about going ahead might give some thought to the kind of information he can impart during an interview. The purpose of the interview, after all, is to get information. In Hullian terms, we might say that thinking through the problem in this way changes the individual's anticipatory responses from fear reactions to more constructive expectations. At the same time he is given preparation for meeting a difficult situa-

tion and accordingly has better prospects of some degree of success or reward in coping with it.

The client's efforts toward reorientation are aided in no small measure, of course, by what he learns in the therapeutic situation itself. If the therapist contrives to make new ways of responding to others rewarding by the way he behaves toward the client perhaps well over half of the battle has been won. This means that the therapist must think of his relationship with the client as a learning situation and act in such a way as to evoke new responses which will be satisfying to the client. If he simply makes the client feel comfortable in talking with him, this fact probably carries over to some degree to other relationships.

French gives an excellent illustration of the point we have in mind in reference to a patient whom he describes in this way:

The patient's attitude was, in a sense, similar to that of an intimidated animal—a combination of rebellion and fearful, grudging submission. The jerking of his arms were abortive rage attacks, inhibited blows. The irritability toward his family and friends was a sign of his insecurity. Then too, his needs for dependence were frustrated because his inferiority feeling and hostility would not allow him to lean on anyone. His impotence was the expression of his adolescent insecurity, since all sexual expression was linked in his mind with "paternal veto" (1, p. 62).

French relates how this patient tried to put him in the role of a domineering father and describes his reaction as follows:

An unusually tolerant attitude was maintained.... Where the father had been extremely critical of the patient, the analyst openly acknowledged admiration of certain of the patient's qualities—his quick mind, his physical skills, his sophistication. He also expressed interest in the patient's business and social activities. Of particular importance was the fact that the therapist's tolerance extended to sexual matters. It became apparent that the straitlaced father had had a very intimidating effect upon the patient concerning any sexual expression. The therapist had ample opportunity to display the opposite attitude, since the patient's sexual yearning and attempted adventures took an important place in his associations. (1, p. 58).

In response to this treatment, the patient's behavior changed quite strikingly. This is an excellent illustration of the therapist's acting in such a way as to facilitate relearning taking place in the therapeutic situation itself.

Before concluding this discussion of relearning, attention might again be called to the consequences of behavior. We spoke earlier of the non-rewarding

consequences of maladjustive behavior. Reorientation would, then, imply rewarding consequences. Very simple suggestions can sometimes lead to behavior that brings deep satisfaction to the client. One individual, complained of the stupidity of people's conversation about such things as the weather. Further discussion led to the observation that idle conversation was often an attempt to be friendly at least even though it might not be very meaningful in itself. At this point the client was receptive to the idea that he himself might do more to manifest his good will toward others. During the subsequent interview he told with obvious pleasure of the satisfaction he had gotten from engaging people in conversation about the weather. Apparently the previous interview had suggested ways of acting that brought rewarding consequences which in this instance consisted of friendliness shown by others toward the client. Numerous other examples come readily to mind of our failures to behave in ways that bring rewarding consequences in the nature of acceptance by others. A common fault of husbands, for instance, is neglecting to compliment their wives for doing a good job of housekeeping. Employees often complain about bosses who let them know if anything is wrong but have little to say when a job is well done. In the light of these examples, it seems clear that therapeutic efforts toward reorientation might very well be directed to a large extent toward implementing means of behavior making for more rewarding interpersonal relationships.

In summary, a Hullian conceptualization of therapy might be subsumed under these headings: 1) maladjustive behavior has immediately rewarding consequences but more remote punishing consequences, as Mowrer and Ullman have suggested, 2) this behavior is inhibited through the punishing consequences becoming available to the client, and 3) new behavior, replacing the maladjustive behavior, is learned when it is carried out and accompanied by reward.

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THE PSYCHOLOGIST AND THE AMERICAN DOCUMENTATION INSTITUTE

STEUART HENDERSON BRITT

McCann-Erickson, Inc., New York City

THE attention of psychologists is called to some services of real importance and rare value available through the American Documentation Institute. The development of microphotography and bibliofilm has extended into many fields, particularly journal publications and abstracts. The ADI offers to psychologists and other scientists various services in the field of documentation at low cost.

Among the principal achievements of the American Documentation Institute since its founding in 1937 are: the establishment of *auxiliary publication*; investigation into the apparatus and applications of *microphotography*; and the reproduction of sets of journals on *microfilm* in order that many libraries might procure long runs of valuable material inexpensively.

AUXILIARY PUBLICATION

Auxiliary publication provides a means whereby editors of journals and other people, after publishing abstracts of worthwhile articles that for one reason or another cannot be printed in their entirety, deposit the original manuscript with ADI so that microfilm copies can be procured by interested persons at nominal cost. (A list of about 4,000 deposited manuscripts has been compiled and is available on request from ADI.) The editor of a journal can thereby publish as much or as little of a technical paper as he wishes. In the case of a very specialized paper, it may be only an abstract or summary. He appends to the notice or article a note stating that the full article with diagrams, pictures, etc., can be obtained by remitting a certain sum, and specifying the document number under which this full article has been deposited at the central agency operating the auxiliary publication service. Orders are sent by readers directly to this central agency, the American Documentation Institute. Microfilms of the document, or enlarged photoprints readable without optical aid, are made only if and when ordered. In this way the document is perpetually "in print," but no extensive, space-consuming stocks need be stored—only the document itself and the

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The operation of this plan is simple and uncomplicated; and editors may use it when, how, and if they find it helpful. No financial participation or guarantees on the part of the editor or author are required. While this plan of auxiliary publication could be used with other methods of duplication, microfilm is the least expensive and most universal, in that text and illustrations of any sort can be handled. Scientists and other people are notified of the existence of documents and their availability on order by publication of notices in the journals whose editors transmit the documents for deposit. Documents are treated in abstract journals in the same manner as other articles. Those who want a document may order it and receive it in microfilm or photoprint form. The ADI invites editors of journals and institutions to utilize this service; and scientists and scholars are requested to bring this service to the attention of editors.

The editor of *The Journal of Applied Psychology* states that it would be difficult to achieve his goal of "brevity consistent with clarity" were it not for the existence of ADI. He says that in one instance "we saved eight pages of tables, thus saving money for the author and for the American Psychological Association, and yet making all eight tables readily available to the reader for 50 cents either in microfilm form or in photostat form."

MICROPHOTOGRAPHY AND BIBLIOFILM SERVICE

Microphotography has expanded into many new fields, and there is now available equipment which exceeds in speed and efficiency anything thus far developed. Computing machinery, in part derived from radar and other wartime developments, offers possibilities in documentation that still remain to be explored. Facsimile transmission, a laboratory technique before the war, is now in use. Recently in Washington D. C., Ultrafax, a means for television transmission of documents and distant reproduction at speeds of over a million words per minute, was shown publicly by the Radio Corporation of Amer-

ica. A rapid selector capable of extracting desired information from a vast coded file of data with great rapidity is under construction. Miniature facsimile, microprint, microcards, and many other processes are receiving current attention.

These developments are of tremendous importance because existing systems of journal publication, even including abstracts, are strained to the utmost in all fields of specialization. Lags in time of publication are considerable; materials already published are not as readily available as they might be if reproduction on microfilm were not available to many libraries and individuals. Rare and out-of-print journals of a scientific or scholarly nature may be added to one's library through use of the ADI sets-of-journals project, at unusually low cost. Microfilm journals have been made of journals that are most in demand.

The Bibliofilm Service, formerly operated by the American Documentation Institute under cooperative agreement with the U. S. Department of Agriculture, is now being operated by the Library of the Department of Agriculture. The ADI is continuing to cooperate by loan of equipment, and is giving major attention to the important function of auxiliary publication through microfilm. The rates are as follows:—*Microfilm*: periodical articles—a flat charge of 50 cents for any single article, from any single volume of a periodical, regardless of the length of the article; books—50 cents for each 50 pages or fraction thereof. *Photostats*—10 cents for each page of text (20 cents per photostat print), with a minimum charge of 50 cents per item.

All charges are on the basis of cash with order, except for State and Federal agencies. Orders for Bibliofilm Service may be addressed to the Bibliofilm Service, U. S. Department of Agriculture, Washington, D. C.; and checks or money orders are made payable to the Treasurer of the United States.

HISTORY OF ADI

The American Documentation Institute has existed for more than a decade as an active operating entity in the field of documentation. Organized in 1937 for the promotion and development of documentation in scholarly and scientific fields, it is a non-profit corporation with a membership representing scholarly and scientific agencies.

Its councils and activities bring together physicists, astronomers, biologists, economists, librarians, historians, bibliographers, archivists, psychologists, and many other specialists in the common

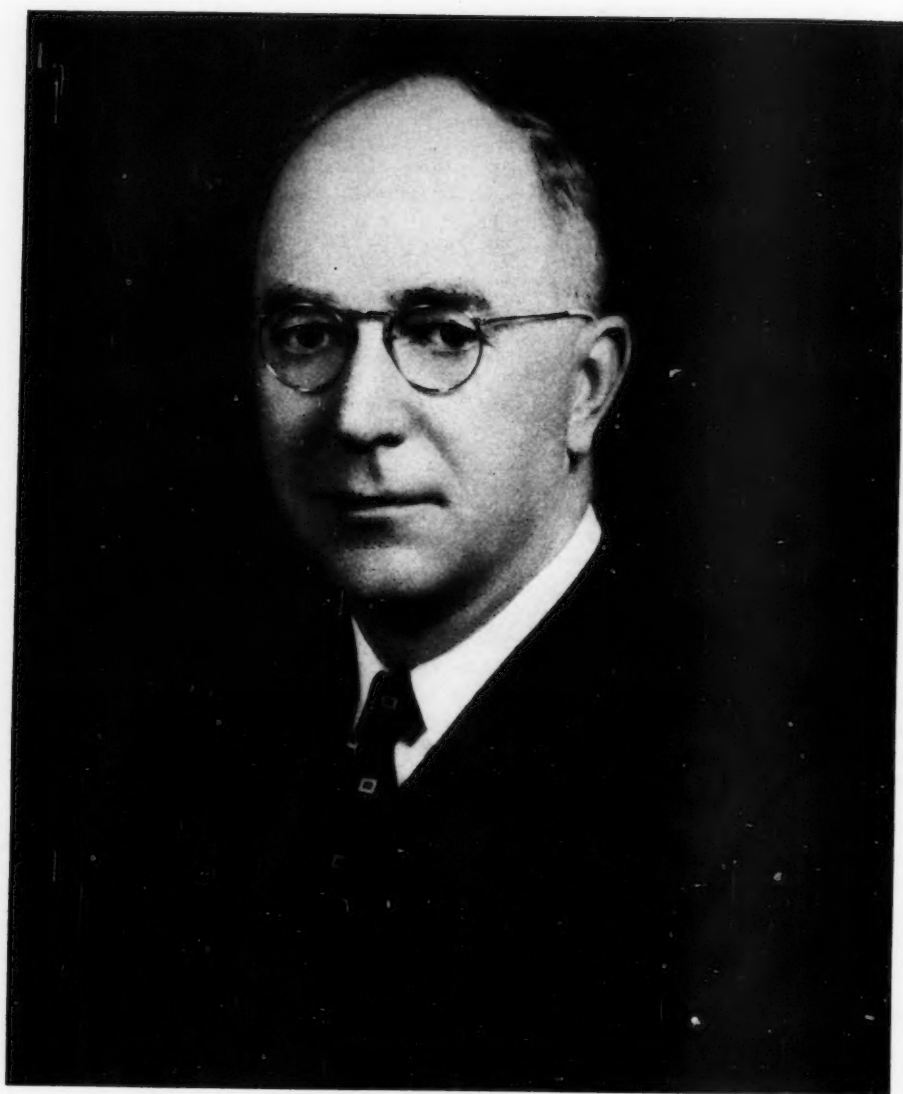
interest and problems of documentation. The ADI is operated by a Board of five Trustees, elected by the membership.

The Certificate of Incorporation and By-Laws of the ADI limit the number of nominating agencies to two hundred. At present there are sixty-five such agencies, and the Board of Trustees recently voted to expand the list of such agencies through the adoption of a regulation for the fuller definition of the term *nominating agency* which would include "American societies, associations, libraries, museums, laboratories, institutes, universities, agencies of federal, state or local government, and other organizations, institutions, or corporate bodies which are engaged in, or interested in, documentation activities." This widening of definition would make possible the inclusion of industrial laboratories, business concerns interested in documentation, research institutes, and other diverse interests.

Although ADI does not require the payment of dues, fees, or assessments by its members, it has been solvent ever since its founding, due in large part to careful handling of its resources produced by grants in aid, gifts, and a small income from microfilm activities. The work of the ADI in this field is worthy of support, and needs continued financial assistance to carry on present projects and further activities. Plans are under consideration for increasing the financial resources; and a regulation recently adopted by the Board suggested voluntary contributions from nominating agencies. In 1947 the American Documentation Institute affiliated with the International Federation for Documentation, recognized by Unesco as an important international cooperating agency. This action will bring the United States even more into the world picture of documentation, and facilitate the exchange of information through interlocking committee activity.

That the whole field of documentation is of the greatest importance to scholars and research workers goes without saying. Microfilm and other techniques of documentation still in developmental stages open up great possibilities for disseminating valuable information, and make available at small cost materials which might otherwise be prohibitive or impractical of use. Further information concerning the ADI may be obtained by writing Dr. Watson Davis, Secretary of the American Documentation Institute, Science Service Building, 1719 N St. N.W., Washington 6, D. C.

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Across the Secretary's Desk

PLACEMENT ACTIVITIES IN THE APA FOR 1949

The APA office is frequently asked: "What is the current demand for psychologists?"

As measured by the requests coming in, there is still plenty of demand for all kinds of psychologists. But the preferred applicant is a young man who has just finished his PhD. Some two-thirds of the current inquiries describe their candidates in this fashion. A large share of the remaining vacancies are for an MA of either sex with several years of clinical experience.

Although many employers use personnel at various levels of skill, they evidently expect well-trained psychologists when they apply to the APA Placement System. This year we are in a better position than formerly to answer those requests. During April of 1949 there were four times as many new registrants as there were during April of 1948. The number of job requests, in contrast, is just about the same as it was a year ago. The number of vacancies described in the Notes and News columns, however, has increased, partly as a result of our encouraging employers to use that method of announcing their vacancies. Open announcements have proven quite successful; one employer, for example, reported recently that within three weeks he had received applications from 58 prospects, several of whom he would probably employ.

The reasonably young and well-trained psychologist, preferably with a PhD, is the easiest to place; but such persons also find it easy to secure positions through other channels, so not all of them register with the APA. In contrast, people who find it difficult to obtain new positions in other ways are likely to register. There are three groups whom employers usually will not consider.

First are those without graduate training in psychology. Because of the lack of demand, we are no longer accepting AB's in psychology as registrants. We do not get requests for people at that level and it seems best to tell them that in the beginning. The ambitious student can then proceed to get a position for himself which will give him preliminary experience.

A second group not in demand is made up of persons trained in other fields, who have heard of the shortage of psychologists; they sometimes seek employment through the APA office. They too have

to be told that they cannot expect placement in the psychological field.

A third group seldom hearing from employers is made up of older psychologists. Most administrators will not employ psychologists beyond a certain age except at fairly high ranks. For lower level positions they demand younger ages. Since the job requests tend to be more frequent for employment at the lower ranks, particularly in academic positions, older registrants are handicapped. Furthermore, the usual job request carries a salary offer of \$5000 or less. Many of the older registrants want a higher salary in a new position and many are already receiving more than \$5000 in their present posts. These factors make it more difficult for an older registrant than for a younger one.

There are some difficulties which beset the Placement System even with the best of registrants. One is lack of communication. Registrants sometimes do not tell us when they move, or when they accept a new position; they do not always give frank answers to questions which would help us select suitable vacancies to which to refer them; and they do not always answer letters of inquiry from prospective employers. Sometimes they register too soon, turn down offers, and then write that *now* they are ready to consider offers. Employers write grateful notes thanking us for lists of prospects, but frequently forget to let us know whether they actually hired anyone from the lists we supplied. Though employers sometimes send us valuable additional information about our registrants, the news does not always reach us soon enough to be of practical use.

We sometimes consider charging a fee for the placement service, hoping that the payment of money would lead both registrants and employers to take more seriously their responsibilities to keep us informed.

Many organizations require that the registrants in their placement service be members. If we required of our registrants even as much graduate training as we do of our members (roughly one year), we would have a group that more nearly meets the employers' expectations.

Payment for the service and higher education requirements for the registrants might make a more satisfactory Placement System.

HELEN M. WOLFLE

Psychological Notes and News

Paul H. Schiller died in a skiing accident on Mount Washington in New Hampshire on May 1, 1949. He was visiting Harvard for two months, on leave from the Yerkes Laboratories. Dr. Schiller came to the United States two years ago from the University of Budapest, where he had been head of the department of psychology.

Amy R. Holway, formerly of the Merrill-Palmer School, died in March 1949 at the age of fifty-four.

Theodore S. Henry died on November 17, 1948 at the age of seventy.

Charlotte Lowe, former APA associate, died January 25, 1949 in Liverpool, England, at the age of sixty-five. Miss Lowe was born in Liverpool; she resigned in 1944 from the Bureau of Child Study, Chicago Public Schools, to return to her family.

Frank A. Beach was elected a member of the National Academy of Sciences at the annual meeting on April 25-27. **Henry Piéron** of the Sorbonne was elected a Foreign Associate.

Hadley Cantril of Princeton University received an honorary degree of Doctor of Laws on the occasion of the Bicentennial Celebration of Washington and Lee University on April 12, 1949.

Walter F. Grether attended the First International Aeronautical Industries Meeting held in Paris, as representative of the Aero Medical Laboratory of the United States Air Force. He was invited by the chairman to read a paper entitled *Design of Instruments for Ease of Reading*.

Robert W. Kleemeier, now at Northwestern, has accepted the position of director of the newly established Laboratory for Gerontology and Geriatrics at Moosehaven, Florida, effective September 15.

Walter L. Wilkins, now professor of psychology at Notre Dame University, will in September become professor of psychology and director of the department at Saint Louis University.

B. F. Skinner was elected a member of the American Philosophical Society at their annual meeting in April.

Richard S. Crutchfield has been appointed associate professor of psychology at the University of California, Berkeley, for the academic year 1949-50. He will be on leave from Swarthmore College. **Henry Gleitman** has been appointed assistant professor of psychology at Swarthmore College for the coming year.

Don Cahalan has accepted the position of research director for military personnel for the Attitude Research Branch, Army-Air Force Troop Information and Education Division, European Command, Department of the Army. His former position as director of the Opinion Research Center, University of Denver, will be taken over by **Hugh J. Parry**, now associate director.

Arthur Lerner will be a member of the staff of the summer session at Central Michigan College of Education, Mt. Pleasant, Michigan.

Allen L. Edwards of the University of Washington, **Fritz Heider** of the University of Kansas, and **David A. Grant** of the University of Wisconsin will be visiting professors at Stanford University this summer.

Albin R. Gilbert has returned to the United States from the European Command Engineer School, where his duties included supervision of a program for testing aptitudes of German personnel employed by the occupation forces.

S. L. Crawley will be the new head of the department of psychology at the University of Utah after September. He is now at CCNY.

Samuel Gerstein, formerly chief of the VA Advisement and Guidance Unit in New Haven, was last spring appointed chief clinical psychologist at the U. S. Naval Disciplinary Barracks, Portsmouth, New Hampshire.

Robert D. Swan of Mary Baldwin College has accepted a position for 1949-50 as assistant professor at DePauw University.

Claude E. Buxton has accepted an appointment as professor of psychology at Yale University, effective in September.

Diplomates. In Volume 3, Number 5, of the *American Psychologist* (May 1948), the American Board of Examiners in Professional Psychology announced the award of its diplomas to 234 members of the APA in the indicated professional specialties. In Volume 3, Number 8, of the *American Psychologist* (August 1948), the Board announced the award of its diplomas to 194 additional members of the APA in the indicated specialties. The Board announces herewith the award of its diplomas to another 195 members of the APA in the indicated professional specialties. These three announcements represent the award of 623 diplomas to the senior members in professional fields of psychology, on the basis of a review of individual qualifications.

CLINICAL

Adams, Donald K.
Adams, Michael
Babcock, Harriet
Balken, Eva R.
Barker, Margaret Bradford
Bartelme, Phyllis F.
Bergman, Paul
Betke, Sister Maria Angela
Bice, Harry V.
Blanchard, Phyllis
Blumenthal, Seymour M.
Bowes, Norman T.
Buhler, Charlotte B.
Burnside, Lenoir Henderson
Cantarow, Elizabeth S.
Carlson, Wendell R.
Carroll, Clara
Carter, Linda L.
Cason, Hulsey
Chase, Genevieve
Conkey, Ruth Clark
Cornsweet, Albert C.
Cowin, Marion F.
Curtis, Henry S., Jr.
Deahl, Katharine
Dimmick, Graham B.
Driscoll, Gertrude P.
Durfee, Hildegard
Easter, Verna A.
Edwards, Austin S.
Estes, Stanley G.
FitzSimons, Marian J.
Flinn, Helen L.
Foster, Roberta Parkinson
Frenkel-Brunswick, Else
Friedline, Cora L.

Gaudet, E. Louise
Gillman, Etta C.
Gilmore, John V.
Glanville, A. Douglas
Goudge, Mabel E.
Granich, Louis
Grayson, Harry M.
Greenberg, Pearl
Greene, James E.
Guiles, Austin P.
Hansburg, Henry G.
Harrison, Ross
Hellmer, Leo A.
Herrick, Colin J.
Herrmann, Katharine F.
Hewson, Louise R.
Hibler, Francis W.
Hinckley, Elmer D.
Hinton, Ralph T., Jr.
Hunt, J. McV.
Jones, Viola M.
Katz, Ernst
Katz, Evelyn
Kelley, Ida B.
Kessler, Mabel G.
Key, Cora B.
Klein, D. B.
Ledwith, Nettie Herrington
Lewin, Herbert S.
Lithauer, Donah B.
Lodge, George T.
Lorr, Maurice
Lottier, Stuart
McGinnis, Esther
Miller, Doris Reed
Milstein, A. Freda
Murphy, William C.

Paul M. Fitts, formerly head of the Aero Medical Laboratory, Wright Field, will in the fall go to Ohio State University at the rank of professor of psychology.

Paul Horst will spend next year as director of research at Educational Testing Service, Princeton, while on leave of absence from the University of Washington.

Myers, C. Roger
O'Connor, Zena C.
Orr, Sister M. St. Mary
Ortleb, Ruth
Page, Dorothy C.
Page, James D.
Patterson, Mervin
Patterson, Ruth Melcher
Paulsen, Alma A.
Peck, Leigh
Perkins, Keith J.
Pignatelli, Myrtle E. Luneau
Reigart, Agnes Hodgson
Riley, Gordon L.
Rohde, Amanda R.
Rohrer, Perry L.
Rosen, Esther Katz
Rowe, Dorothy
St. Clair, Walter F.
Schwesinger, Gladys C.
Scovill, Mary S.
Seago, Dorothy Wilson
Sears, Richard
Seiler, Geraldine F.
Seward, Georgene H.
Shaffer, G. Wilson
Siegel, Miriam G.
Simmons, Persis W.
Speevack, Morris
Spencer, Douglas
Starr, Anna Spiesman
Telford, Charles W.
Thorpe, Louis P.
Ullmann, Charles A.
Van Alstyne, Dorothy
Van Waters, Ralph O.
Vik, Esther Stubbs

Webb, Marvin W.
Weiss, Emalyn R.
Wepman, Joseph M.
Westbrook, Charles H.
Westburgh, Edward M.
Whiteside, Stella
Woodring, Paul D.
Woolf, Henriette K.
Worcester, Dean A.
Wright, Martin E.
Young, Grace C.
Young, Paul C.
Young, Robert A.
Zawadzki, Bohdan

INDUSTRIAL

Baier, Donald E.
Brouwer, Paul J.
Brown, Clarence W.
Buckingham, Guy E.
Chappell, Matthew N.
Copeland, Herman A.
Cutler, Theodore H.
Dean, Dawson F.
Flory, Charles D.
Foley, John P., Jr.
Forbes, Theodore W.
Freiberg, Albert D.
Fryer, Douglas H.
Gorsuch, John H.
Greene, Edward B.
Habbe, Stephen
Hattwick, Melvin S.
Janus, Sidney Q.
Jurgensen, Clifford E.
Karslake, James S.
Martin, John R.

INDUSTRIAL, Cont.

McNamara, Walter J.
 Moore, Herbert
 Moore, Joseph E.
 Otis, Jay L.
 Paterson, Donald G.
 Raney, Edward T.
 Replogle, Fred A.
 Root, Alfred R.
 Ruch, Floyd L.
 Selover, Robert B.
 Shurrager, Phil S.
 Sones, A. Merlin
 Upton, Morgan
 Vernon, Leroy N.
 Warren, Neil D.

COUNSELING & GUIDANCE

Aaron, Sadie
 Arsenian, Seth
 Block, Virginia Lee
 Bluett, Charles G.
 Bogardus, Helen E.
 Carlson, Harold S.
 Carlson, Hilding B.
 Cason, Eloise B.

Failor, Clarence W.
 Faries, Miriam
 Froehlich, Clifford P.
 Hamrick, Randall B.
 Hanna, Joseph V.
 Harrell, Ruth Flinn
 Heston, Joseph C.
 Hill, Lillian Bray
 Leuba, Clarence
 Mathewson, Robert H.
 McClintock, James A.
 Meiss, Margaret L.
 Meyer, George
 Moynihan, Rev. James F.
 Mueller, Kate Hevner
 Nelson, A. Gordon
 Odoroff, Maurice E.
 Partington, John E.
 Reynolds, Henry E.
 Ryans, David G.
 Shuttleworth, Frank K.
 Stalnaker, John M.
 Steel, Marion Smith
 Tuckman, Jacob
 Tyler, Leona E.
 White, J. Gustav
 Wilke, Walter H.

In a recent listing of diplomas awarded by the Board, the field of specialization for Dr. Gladys Hipple Watson was listed as clinical psychology. This listing is incorrect inasmuch as her diploma was awarded in the field of counseling and guidance, and the Board takes this opportunity to make a formal correction of its earlier error of listing.

JOHN G. DARLEY
Secy. of ABEPP

Personality: Symposia on Topical Issues is the name of a new series of symposia under the editorship of Werner Wolff, Annandale-on-Hudson, New York, which will be published by Grune & Stratton. Joseph Precker is the assistant editor, and thirty consulting editors have been appointed. Dr. Wolff plans the first issue for September 1. Manuscripts are invited.

The annual time of election for APA Associates has changed. The deadline for applications is now August 1 rather than February 15.

The **Illinois Psychological Association**, formerly the Illinois Association for Applied Psychology, has recently amended its By-Laws to broaden its functions and purposes, and to admit to full membership every reputable psychologist in Illinois who meets

the minimum requirements of the American Psychological Association. Apply for application blanks to the secretary, Dr. Milton A. Saffir, 55 East Washington Street, Chicago 2, Illinois.

A Workshop for Research on Old Age will be held from August 8 to 26 at the University of Chicago, under the direction of Ernest W. Burgess and Robert J. Havighurst. Applications are invited.

The **Association of Midwestern College Psychiatrists and Clinical Psychologists** held a program at Indiana University on April 9 and 10. Psychologists who spoke were Fred McKinney and Irwin A. Berg. The program chairman was Delton C. Beier.

The **Southeastern Association of Directors of VA Guidance Centers** held a spring conference on April 1 and 2. Savannah's Community Guidance Center acted as host. This association, involving the guidance directors of the education institutions and public school systems in Florida, Georgia, Alabama, Tennessee, and North and South Carolina, meets twice a year to discuss professional and administrative problems.

The **Third Annual Conference on Mental Hygiene and the Problems of Exceptional Children** met at Syracuse University on May 13 and 14.

The **Brooklyn College Testing and Advisement Center** has announced the formation of a remedial reading clinic for children and adults in addition to its other services. The staff now includes Max Siegel, chief psychologist; Albert Hahn and Joseph Sturm, clinical psychologists; Wilhelmina Drake, Naomi Parness, and Jean Cole, vocational counselors.

The **trustees of the Godfrey Thomson Research Fund** have given £5,000 to the University of Edinburgh and promised an annual payment of £1,000 (in the first instance up to 1952) to permit the establishment of a Readership in Educational Research, the holder of which will be largely concerned with research into problems of selection and testing.

The Godfrey Thomson Research Fund draws its income from royalties on the Moray House Tests and on fees from county and city education authorities for the use of tests and statistical advice. The tests for eleven-year-old children are very widely

used, for seven out of ten children in Great Britain are tested by Moray House Tests at the age of eleven or thereabouts.

The 1949 Directory is still on schedule, with the copy due to leave the APA office on June 18. On May 26, 5247 cards had been returned by the members.

The election ballot for 1949 is on schedule, with the ballot due to be mailed early in June. This year 248 letters were sent out to ascertain whether candidates would serve if elected.

The Ninth International Congress of Psychotechnology will meet in Berne, Switzerland, on September 12-17, 1949, with Henri Piéron as president. Reports can be given in French, English, German, and Italian. The registration fee for active members will be \$12, and for associate members, \$6. For tourist and hotel information, write to Le Bureau Officiel de Renseignements, Bundesgasse 20, Berne, Suisse. For additional information and for registration, write to Mme. Dr. Franziska Baumgarten, Thunstrasse 35, Berne, Suisse.

Psychologists wishing to send exhibits of charts, tests, or recent books for display at the International Congress of Psychotechnology should correspond with Harold Seashore, 522 Fifth Avenue, New York 18, who has consented to arrange for the forwarding of such exhibits.

The University of Cincinnati should technically not have been listed in "Available Internships in Psychology" in the February issue of the American Psychologist. The nearest approximation to an internship, a graduate assistantship, is currently filled by a student who will require two more years to complete the PhD. We regret that we have caused unnecessary work for both the University and for the prospective applicants.

The Bureau of Naval Personnel, Washington, D. C., has announced that it hopes to undertake a number of research projects in the near future. Contemplated projects include topics in the general areas of job evaluation and classification, selection of personnel, and evaluation and improvement of training techniques. The following are examples of the type of studies in which the Navy is interested: (1) Study of the effectiveness of the Navy personnel

classification system; (2) study of military jobs in which scientists can be most effectively utilized; (3) the development of measuring instruments, other than questionnaires, for personality, character, and temperament characteristics; (4) design and validation of "situational tests" for the appraisal of leadership and leadership aptitude; (5) development of non-verbal, culture-free classification tests; (6) development of higher level tests of aptitude; (7) development and validation of psychomotor tests; (8) study of forgetting curves and rates of deterioration on relatively complex skills; and (9) identification of differential characteristics of superior instructors in various training programs.

Research organizations who might be interested should write to the Research Division of the Bureau of Naval Personnel, Washington 25, D. C. Groups who inquire will be furnished more specific information concerning this extensive program.

School psychologist in field of clinical; fiscal year begins July 1, with preference for a candidate who will serve 12 months in the year with one month's vacation; however, ten months' service is a possibility. The candidate must qualify as a psychological examiner in the State of Illinois; requirements are an MA or higher degree in the field of psychology or educational psychology, and one year of paid experience with children at all ages under the supervision of a qualified psychological examiner. Salary dependent on experience and training; from \$4000 to \$5000 for 12 months. Apply to Miss Hester C. Burbridge, Education of Exceptional Children, Evanston Public Schools, Evanston, Illinois.

Employment counselors, who have training and experience in vocational guidance and employment placement work, and a speaking knowledge of Yiddish or German. Salary, \$2950 to \$4175. Apply to Miss Doris Scheiber, Personnel Assistant, United Service for New Americans, Inc., 15 Park Row, New York 7, N. Y.

Examiners. The New York State Department of Civil Service will accept applications during June for positions on its examining staff. Nationwide examinations will be held during July for positions ranging up to a maximum salary of \$8145 annually. Entrance salaries for the positions open to non-residents of New York State are \$4242, \$5232, and \$6700, with five annual increments. Additional positions open

to residents of New York State have entrance salaries of \$3450 with annual increments up to \$4176. For application forms and detailed announcements, write to Dr. Thomas L. Bransford, Director of Examinations, New York State Department of Civil Service, 39 Columbia Street, Albany, New York.

Professor of psychology and chairman of the department. The University of Manitoba invites applications for this position. Commencing salary \$5000 to \$5500. Duties to commence September 1, 1949. Superannuation plan. Traveling allowance. Training should be predominantly in the social, clinical and/or personality fields.

Applications should be sent to the Registrar, University of Manitoba, Winnipeg, Canada, by July 15, 1949 and should include a statement of the applicant's academic qualifications and his teaching and research experience, and three letters of reference of recent date.

School psychologist by September 1, woman preferred, clinical experience, MA or PhD, for school system of 6000 students and 275 teachers. Appropriate salary. Apply to Henry Earl Smith, Superintendent, Sheboygan Public Schools, 837 Jefferson Avenue, Sheboygan, Wisconsin.

Clinical psychologist, as soon as possible, either sex, MA degree, general experience of one or two years with children and specific experience with projective tests; preferably someone with ability to carry on treatment with both parents and children. Send credentials to James M. Robins, Executive Secretary, Erie Guidance Center, 238 West Eighth Street, Erie, Pennsylvania.

Child psychologist, within next six months, for a position with the recently established Tacoma and Pierce County Child Guidance Clinic; duties, therapy under supervision and clinical testing. Salary, about \$4300. Apply to Dr. Robert C. Murphy, Director, 2324 Pacific Avenue, Tacoma 2, Washington.

Statistician, with background in psychological or medical research, to conduct studies of aircraft accidents in the Flying Safety Division at Langley Air Force Base, Virginia. Salary at Grade P-5 (\$6235.20 per year); if especially well-qualified candidate can be found, may be P-6 (\$7432.20 per

year). Apply to the Civilian Personnel Office, Langley Air Force Base, Virginia.

Second Lieutenancies for graduate students. The Department of the Army will select graduate students for training under Army sponsorship during the final one or two years of study leading to the degree of Doctor of Philosophy. After receiving his degree, the psychologist must apply for and, if accepted, will receive a commission as a First Lieutenant, Medical Service Corps, Regular United States Army.

Applicants must be graduate students in clinical psychology and psychophysiology who:

1. Are male citizens of the United States.
2. Are not less than twenty-one nor more than twenty-nine and one-half years of age at the time of application.

3. Have completed at least two years of graduate work leading to the PhD degree in clinical psychology or psychophysiology and be matriculated in a recognized university at the time of application.

The selected candidates will receive the salary of Second Lieutenants (\$3184 if married and \$2950 if unmarried); they must pay for their own tuition and other fees.

For further information write to Department of the Army, Office of the Surgeon General, Washington 25, D. C., Attention: Clinical Psychology Branch.

Clinical psychologists, rank Psychologist II, at child guidance center in Madison. Salary \$285 plus cost-of-living bonus of \$35 a month. Center is used for field work by the Department of Psychology and School of Social Work of the University of Wisconsin. Apply to Dr. Eugenia S. Cameron, Bureau of Maternal and Child Health, State Office Building, Madison 2, Wisconsin.

Industrial psychologist, PhD, industrial experience preferred. Write to W. Boyd Owen, Owens-Illinois Glass Co., Box 1035, Toledo, Ohio.

Industrial psychologist, MA, to write reports to industrial clients based on tests, interview, and other data. Salary \$2400 during training period. Salary increases dependent on ability. Profit-sharing plan. Send complete credentials to Mr. Martin M. Bruce, Chief Psychologist, The Personnel Institute, 201 E. 57th St., New York 22, New York.

Convention Calendar

AMERICAN PSYCHOLOGICAL ASSOCIATION

September 5-10, 1949; Denver, Colorado

For information write to:

Dr. Dael Wolfe, American Psychological Association
1515 Massachusetts Avenue, N. W., Washington 5,
D. C.

WESTERN PSYCHOLOGICAL ASSOCIATION

June 24-25, 1949; Eugene, Oregon

For information write to:

Dr. M. Bruce Fisher, Secretary
Fresno State College,
Fresno 4, California

SOCIETY FOR PROJECTIVE TECHNIQUES AND THE RORSCHACH INSTITUTE, INC.

September 9-10, 1949; Denver, Colorado

For information write to:

Dr. Theodora M. Abel, President
Palisades, New York

NINTH INTERNATIONAL CONGRESS OF PSYCHOTECHNOLOGY

September 12-17, 1949; Berne, Switzerland

For information write to:

Mme. Franziska Baumgarten,
Thunstrasse 35, Berne, Suisse

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